

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—19TH YEAR.

SYDNEY, SATURDAY, AUGUST 20, 1932.

No. 8.

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An Address.¹

By A. V. BENSON, M.D. (Brux.), M.R.C.S. (England),
L.R.C.P. (London),
*Retiring President of the South Australian Branch
of the British Medical Association.*

I AM no less perturbed than some of my predecessors in the choice of a subject for the Presidential Address. I have frequently heard them refer to the difficulty of choosing something to which they could do justice, or matter that would interest their audience. I therefore hope that a *résumé* of some phases or episodes in the history of medicine and therapeutics may prove of interest to you and to me.

The oldest medical treatises known are: (i) the medical papyrus, 1600 B.C., discovered by Professor Flinders Petrie; (ii) the so-called papyrus Ebers,

1500 B.C., found between the legs of a mummy: (iii) the Berlin medical papyrus, 1400 B.C.; (iv) the British Museum papyrus, 1100 B.C.

If we could just have lived about 3,500 years ago and then undergone reincarnation from time to time, what wonderful changes would have been apparent to us. King Athosis, who lived 6,000 years ago, is said to have written a book on medicine (MacFie in the "Romance of Medicine"). The early Egyptians believed in disease being caused by evil spirits or devils; and treatment by incantation was practised, although some concoction similar to beer, and dates, oils, and incense were administered. For diseases of the eye, the oldest medical treatise but one, the Ebers papyrus, of about 1500 B.C., discovered between the legs of a mummy, gives the following treatment.

Take a human brain, divide it into half, let an half be added to honey, and the eye be anointed with this in the evening; the other half should be finely ground, and it may be used for anointing the other eye in the morning.

¹ Delivered at the annual meeting of the South Australian Branch of the British Medical Association on June 23, 1932.

For cataract, verdigris ointment was used, accompanied by incantation, evidently very sincere and prayerful.

It seems that after a long period of treatment by means of sorcery, pharmacy came into being, and many drugs in use today were given to the sick. To mention some: aloes, opium, castor oil, peppermint, yeast (which has regained its popularity), juniper, and squills, turpentine, gentian, myrrh, hyoscyamus, magnesia, lime, soda, iron and lead.

The Egyptians used pills, plasters, powders and ointments and even injections. They wrote prescriptions. But if the Egyptians were able to produce cures by incantations and sorcery, the ancient Greeks deemed medicine a divine profession; it had its God of Medicine, Æsculapius, who was probably a man, and whose son Podalirius is said to have been the first to practise blood letting. To Æsculapius are attributed some most remarkable cures. One illustration: He simply cut off the head of the patient suffering from dropsy, held up the body by the heels, let the water run out, and then clapped on the head again. MacFie says: "Very simple, no doubt, but requiring a lot of nerve on the part of the patient."

The ancient Greeks believed that were their afflicted parts licked by serpents, they would recover, and serpent flesh was administered as a medium. Massage, counter irritation, baths and poultices were ordered, even physical culture and riding exercises were indulged in, and drugs such as iron, hellebore, squills, lime *et cetera* were used. They even forestalled Metchnikoff by using sour milk in the treatment of indigestion. It was about this time that Hippocrates, the Father of Medicine, came into being, and the thinkers were becoming more practical, but not so the masses.

Hippocrates.

Hippocrates as a therapist relied more on general measures than drugs; he poulticed patients, bled and dieted them. He gave purgatives and diuretics, and paid particular attention to diet and baths. He also ordered his patients a change of air. He even gave test meals and made them vomit in order that he could discover how far digestion had advanced. He must have possessed great clinical sense, observing all the points necessary for a correct diagnosis: expression, gait, complexion, posture. He taught ethics. The so-called oath of Hippocrates reveals his conception of the duties of a physician.

Aristotle.

Aristotle followed Hippocrates, and his teachings were observed for centuries. He was evidently of the cheap-jack class and could be compared with the garrulous quack of the present day. He made statements without proof, and his success was due to the ignorance of the people. The College at Alexandria was founded by Alexander the Great, said to be encouraged by Aristotle, and no doubt great advances were made during this régime, for, in addition to anatomical and physiological dis-

coveries resulting from permission being given by the authorities to dissect the dead human body and vivisection animals and criminals, operative surgery and pharmacy progressed.

In surgery new instruments and operations were introduced. New drugs were found, and more than two thousand drugs were described about the year 200 B.C. One preparation, called theriaca, contained no less than sixty-three ingredients, including essence of viper's flesh, poppy, pepper, rose leaves, liquorice, cinnamon, fennel, cardamom, balsam, gum. Even lanoline was in vogue, and MacFie mentions that an action was brought in 1894 to invalidate the patent of lanoline on the ground that Dioscorides had described a process for obtaining fat from wool.

Galen.

In the second century A.D. Galen lived. He was born in Greece, educated at Alexandria, but did his great work in Rome. He proved to be the genius of his time and did wonderful work in anatomy and physiology. He was the first to establish the fact that kidneys secrete urine. He tied the ureters and showed that under such circumstances no urine was secreted, and in spite of all his teaching and of the rapid progress medicine made during his life's work, it was to meet with a set-back and for centuries made little progress, being superseded by sorcery and magic. Incantations were again practised, and although science and a wish to improve science existed for a time, it seems incomprehensible that the people should return to the savage teachings of earlier days.

In A.D. 569 Mohammed was born, and after the Arabs gained sway by destroying churches, burning libraries *et cetera* ("there were enough books burnt to heat forty thousand baths for six months in Alexandria") a new era was established. The Arabs studied chemistry, pharmacy *et cetera*. Nitric and sulphuric acids were discovered, and by means of nitric acid and sal ammoniac gold was dissolved, and potable gold was used as an elixir of life; phosphorus was also isolated. The Arabs proved better surgeons than physicians. Dissection was forbidden, but it would seem that those who were inclined towards medicine were only too pleased to fall back on the works of Galen, and it was upon his work, and his work alone, that the Arabs depended. Thus no progress was made in medicine or in physiology for fifteen hundred years after Galen's death.

Paracelsus.

In 1526, Paracelsus, a quack, gained the ear of the people. He lectured at Basle, and held Galen up to contempt. There would appear to be a difference of opinion about Paracelsus. MacFie refers to him in no mistaken terms as a great quack who made a vigorous and vicious attack on the medical dogma of the day. It has also been contended that Paracelsus was a great medical reformer and that he overthrew Galen and altered the whole course

of medicine, but this contention cannot be maintained. Paracelsus was simply an audacious and sensational quack, and his influence did not persist.

Hartmann, in his "Life of Paracelsus", says: "One of the greatest and illuminated minds of that age was Philippus Aureolus Theophrastus Bombast, of Hohenheim, otherwise known as Paracelsus, born in the year 1493." He was the only child of a physician, George Bombast, of Hohenheim. He received instruction in science from his father, who taught him the rudiments of alchemy, surgery and medicine. Attaining his sixteenth year, he studied at the University of Basle. Later on he travelled a great deal, visiting almost every city of any importance in Europe. It is stated that he even travelled to India, being taken prisoner by the Tartars, who were instructed in the secret doctrines by the teachers of occultism in the East. He returned to Europe again about 1521, having probably been absent eight years. Travelling through countries along the Danube, he came to Italy, where he served as an army surgeon, participating in warlike expeditions. On these occasions he collected a great deal of useful information from physicians, surgeons and alchemists, also from executioners, gipsies, barbers, Jews, midwives and fortune-tellers.

He returned to Basle in 1526 and was appointed by the city council a professor of physic, medicine and surgery, receiving a considerable salary. He gained the applause of the students and the concentrated hatred of the professors, druggists and apothecaries, who questioned his *bona fides*. Nobody knew him or where he came from, and furthermore, they did not know whether or not he was a real doctor. However, in July, 1528, he finally made his exit from Basle and wandered away to fresh fields and pastures new, arriving at Nuremberg in 1529, where he was denounced by the regular physicians as a quack, charlatan and impostor. To refute their accusations he requested the city council to put some patients that had been deemed incurable under his care. They sent him patients with elephantiasis, whom he cured in a short time without charging a fee. Testimonials to this effect may be found in the archives of the City of Nuremberg. Paracelsus was still doomed to a life of wandering. In 1530 he visited Munich, Regensburg, Amberg and Meran, and in 1535, Zurich. He finally landed in Salzburgh, where he was received by the Duke Ernest of Bavaria. In this place Paracelsus obtained widespread fame. This he did not enjoy for long, for he died at a small inn on September 24, 1541, after a short illness, at the age of forty-three. There is still a mystery about his death, and it is contended that he was attacked by ruffians hired by jealous physicians and that the real cause of his death was fracture of the skull.

Paracelsus wrote very little himself, but he dictated his thoughts to others. His works included medicine, alchemy, natural history, and philosophy and magic.

Sylvius and Vesalius.

In 1533, Sylvius, the anatomist and miser, lectured in Paris, and he was so mean that he would not buy fuel in the winter, but kept himself warm by playing ball in his room. Amongst his pupils was Vesalius, whose mother, was probably English; and it is contended that Vesalius must be considered the originator of modern anatomy, and the layer of the foundations of modern medicine. He must have been a veritable enthusiast, and made every post a winning post. He even fought with savage dogs over bones that lay exposed in Paris cemeteries, stole a corpse from a public gibbet and robbed graves. He once removed the skin of a corpse in order to prevent its recognition. In later years he was better off. He got criminals to dissect, and executions were sometimes arranged, that the corpse might suit his requirements. In 1542 he wrote a work entitled "Structure of the Human Body".

Harvey.

Harvey came to light in 1578 and medicine took on a new life. It must occur to us that geniuses were born in cycles. Some centuries or periods produced greater men than others. Thus contemporaries of Harvey were Shakespeare, Milton, Ben Jonson, Dryden, Cowley, Bacon, Malpighi. Although the discovery of circulation of blood by Harvey is ever implanted in our minds and was demonstrated by him, we must not overlook that Hippocrates stated that all blood vessels communicated with one another, and that the vessels which spread themselves over the whole body were but branches of an original vessel. Hippocrates actually used the words circulation of the blood. To Galen must also be given some credit for his work on circulation of the blood, and Winter, a teacher of Vesalius, was probably the first to indicate the part played by the lungs in the arterialization of the blood. He taught that blood passed through the lungs from the right to the left ventricle.

Many scientists differed from Harvey, and for some years after the publication of Harvey's work the Galenic doctrine was adhered to by some. However, Harvey's doctrine was the starting point of many valuable discoveries and completely altered treatment. Sir Thomas Browne considered Harvey's discovery of the circulation of the blood greater than Columbus's discovery of America.

Books on Medicine.

In 1672 Nicholas Culpeper, Abdiiah Cole, and William Rowland edited a book on medicine; it was chiefly a translation of a work by that learned and renowned doctor, Lazarus Riverius, sometime counsellor and physician to the King of France, to which were added four books containing 513 observations of famous cures, and a fifth book of select "Medical Counsels", by John Fernelius, with a table of the principal matters treated therein, and also a physical dictionary explaining the hard words used in the books.

The Common Cold.

Now supposing we cull some observations from this work, and take firstly the common cold, so often referred to by the present generation as being beyond the understanding of the present day doctor. It was referred to in those days as distemper of the brain and divided into simple and compound.

Simple distempers are seldom seen by the doctor, for they vanish of their own accord, or with very small remedies or medicines. But because the greatest number of diseases of the head come from a cold, and moist distemper of the brain, we thought fit to discourse on that by itself.

It is quite evident that the physicians of old had to deal with sinusitis, *otitis media*, mastoiditis, and probably recognized meningitis in their own way. This they refer to as a compound distemper, because it gave forth a moisture, because the brain is that of moisture or phlegm, and coldness long abiding draws moisture to itself.

The causes described by them were:

1. Cold and moist sweats which easily turn into phlegm, and also in the time of their concoction by cooling the stomach and liver too much, produce abundance of phlegm, which after is sent up to the brain.
2. Too great a quantity, not only of meats, but also of good and wholesome food, which destroyeth natural heats and begetteth crudities.
3. Eating presently before and after meat and before the former meat is concocted (digested). Whence come many crudities which send phlegm to the head.
4. The ceasing of natural custom of vomiting, or purging phlegm, or the omitting of custom of taking purges, sweats, diuretics or provokers of urine, or omitting of accustomed exercise.
5. To be born of parents troubled with cold distemper of the brain.
6. Old age, by reason of decay of natural heat, and also youth by reason of gluttony, and many other causes are recorded.

The cure was wrought from two indications or intentions, namely, by evacuating or discharging the phlegm and correcting or qualifying the distemper of the humor by its contraries, which had to be done by diet, surgery or physic.

Diet must be hot and dry, and first make choice of pure air, somewhat hot and dry, but not too hot, for heat would pour forth the humors of the head too soon and so produce distillation and other diseases which happen to those who stay long in the sun or inflame their heads with too near approach to the fire. Let not the sick chamber be too little or too low, nor too moist or filthy, but open to dry winds. Sweet herbs may be strewn on the floor as sage, marjoram, lavender, rosemary, tyme, or by brewing the same. Fumigation made by putting amber on the coals, and prescribe as follows: Take wood aloes and bergemot, of each two drachms, storax, one drachm, francincense and sanderach, of each two scruples, gum ammi and cloves, of each half a drachm, make a gross powder and throw on the embers.

A remarkably liberal diet was administered, including all sorts of vegetables, fish, young pigeons, chickens, blackbirds, mountain fowl, fish boiled in wine, adding vinegar and spice. Fruits by the dozens were ordered and advice was given to take a digestive powder after meat.

You must not sleep straight after meat, but wait two hours at least, having taken a gentle walk. You must sleep with your head high, and up on one side, not on the back, all the excrements from the body are to be evacuated in their season, of the brain especially; there-

fore, every morning hawk from the palate, blow the nose, comb and rub the head with a coarse cloth or sponge, which will fetch the superfluities from the brain through the sutures or seams of the skull. The belly must be kept open, and if it will not otherwise, use a suppository, or a clyster, or a gentle laxative by the mouth.

Stone in the Kidney.

In the fourteenth book of the "Practice of Physick" stone in the kidney is described thus. It is called "*dolor nephriticus* which doth afflict the ureters, the common people call it stone colic, because of the great affinity it has with colic".

The cause of this pain is manifold, but chiefly the stone or stuck phlegm; a stone continuing in the reins causeth either little or no pain, but if it fall upon the head of the ureters or get into the passage and distend it, and cannot be brought to the bladder by reason of its greatness, then it causeth grievous pain.

Galen and his posterity thought that phlegm was the material cause of stone, which became hardened, feculent, slimy and tartarous, and heat turned the matter finally into stone.

Aristotle stated that "heat that maketh concretions must be dry, but there is a continued flowing of moisture into the reins and bladder, therefore such a drying and hardening cannot be in those parts". Hippocrates contended that old men bred stone more often than younger men because their expulsive faculty of matter was not so great as the younger men; therefore the matter lay longer in the parts and was more subject to heat. There are scores of older theories advanced in the earlier days of medicine as to the causation of the stone.

The prognosis in those days was unfavourable, "for it useth to bring fevers, stoppage of urine, ulceration and great pain". "If this disease cometh from the parents it is incurable." The older physicians thus showed their belief in diathesis and lithiasis, and in reference to the latter, they refer to concretives or calculi in other parts of the body.

The cure of the pain in the kidneys and the stone sticking in them (these actual words are used), or in ureters, is by enlarging the passage and relaxing them by throwing out the stone, by removing the antecedent cause. An infusion of the following is then administered: marshmallow, violets, pellitory, bearfoot, linseed, and fennegreek seed, figs, camomile. Afterwards open the liver vein of the right or left arm and take away eight or nine ounces of blood, according to the strength and fullness of the patient.

After the blood-letting another large dose of the above infusion was administered, *plus* turpentine and the yolk of an egg.

Diuretics such as couch grass, parsley, asparagus and dill were given. Lemon drinks were also ordered, and there is a note that you must give lemon juice warily, "for it produceth ulceration of the stomach". In a chapter on pestilential fevers, written by a colleague of Culpeper, an account of the symptoms, such as want of appetite, stomach sickness, vomiting and hiccapping, all sorts of weird applications and treatment are applied.

The following reference is made to vomiting:

It doth sometimes so vex those that have malignant fever, that they presently vomit whatever they take, and though they have thirst, with dryness and blackness of

the tongue, yet can they bear no liquor to drink, but vomit all their juleps, emulsions and their small beer presently after they have drunk them. The most grievous symptom is suddenly cured, as it were by a miracle, with a drachm of salt of wormwood given in a spoonfull of juice of fresh lemon, as I have learnt with experience.

Inflammation of the Breast.

Amongst the thirty-eight observations given in the "Practice of Physick" the following is an amusing account of inflammation of the breast.

About the beginning of January in the year 1631, the wife of the renowned Mr. de Rochemore, Chief President at the Court of Subsidies of Accounts, being in childbed, began to be troubled with the inflammation of her right dug, by reason of a blow she had there received. Now there was milk therein, which could not be sucked out. On the first day there was an embrocation used thereto, of two parts of oil of roses and one part of oil of ripe olives. On the second day and the following days the said embrocation was continued only to the part pained and her whole dug anointed twice in a day with ointment of marshmallows, and within a few days she was cured without any other remedy. Cupping glasses were fastened to her shoulder blades, but no vein was opened.

Looseness.

The following are observations of a looseness.

On the 15th July, 1637, Madam de Grosset, being four score years old, but of exceeding strong body, was taken with a looseness and tenesmus which made her to go many times to stool every hour, with most grievous gripings. Her stools were various, sometimes yellow, sometimes leek green and sometimes black. The seminary of the disease was taken away by four purgatives, repeated some distance between, of rhubarb, partly infused, partly in substance with infusion of roses. In the intermediate times, cleansing, pain assuaging and strengthening clysters were given her, with cooling and thickening juleps and emulsions.

Erysipelas.

A cure for erysipelas is recorded.

A gentleman from Montpellier, twenty-five years old, was often troubled with red swellings in his legs. He then began to drink wine much stronger than before, and with very little water in it, from which time he has never been troubled with his swelling, though it has been four or five years since. I conceive the reason is that his expulsive faculty being strengthened by the wine, the matter of said inflammation is expelled by stools, urine, or insensible transpiration.

Falling Sickness.

Falling sickness in a child is described.

A boy three years old had a fit of falling sickness, from which he was freed by the smoke of tobacco, which a servant drew out of a pipe and blew into the open mouth of the boy. The boy fell a-vomiting and the fit ceased.

Influenza.

It is interesting to note that influenza prevailed in France in 1510. Hecker considers there is evidence that it had its origin in the remotest parts of the East. His description of influenza is as follows:

The catarrhal symptoms, which, on the appearance of disorders of this kind, usually from the commencement, seem to have been quite thrown in the background by those of violent rheumatism and inflammation.

The patient was first seized with giddiness and severe headache, then came on a shooting pain through the shoulders and extending to the thighs. The loins were affected with intolerably painful

dartings, during which an inflammatory fever set in, with delirium and violent excitement.

Among the poor and even the rich many died, and some quite suddenly, in the treatment of which the physicians shortened life not a little by their purgative treatment and phlebotomy, seeking an excuse for their ignorance in the influence of the constellations and alleging that astral diseases were beyond the reach of human art.

Legal Recognition of Medical Practitioners.

It is interesting to read that in 1511 an Act was passed by the English Parliament dealing with the medical profession, and was entitled an "Act for the Appointing of Physicians and Surgeons". The gist of the Act proclaims that the candidate shall be examined, approved and admitted by the Bishop of London or the Dean of Saint Paul's.

In 1518 barbers and surgeons were united in one company. Barbers were restricted to pulling teeth, and surgeons had to abandon shaving and trimming beards, whilst physicians were allowed to practise surgery. Sweating sickness broke out in England for a third time in 1517, its first appearance occurring in 1485. It would probably come under the heading of pestilential fevers according to the classification of Culpeper and his colleagues. It partook of the character of rheumatic fever, profuse perspiration, oppressed respiration, extreme anxiety, nausea and vomiting. Many went to bed at night perfectly well and were dead in the morning. The whole of England was visited by this plague by the end of the year.

It is strange that Thomas Linacre, who was practising during the third outbreak in 1517, did not refer to this disease in any of his writings.

Erasmus, in writing to Wolsey's physician, says:

I am frequently astonished and grieved to think how it is that England has been now for so many years troubled by a continual pestilence, which appears to be peculiar to your country.

He suggests that better ventilation is necessary for dwellings, that glass windows admit light, but not air, that such air as does enter comes in as draughts through holes and corners of pestilential emanations.

That floors laid with clay and covered by rushes, the bottom layer of which was unchanged, sometimes for twenty years, harboured expectorations, vomitings and filth.

He advises the use of rushes be given up and rooms so built as to be exposed to light and air on two or three sides, and the windows so constructed as to be easily opened or shut.

He suggests that the people should eat less, and proper officers should be appointed to keep the streets and suburbs in better order. Erasmus was thus our first sanitary reformer.

A favourite prescription in use at this period against sweating sickness was:

Take endive, sow thistle, marygold and nightshade, three handfuls of all. Seethe them in conduit water, from a quart to a pint, then strain into a fair vessel.

Then delay it with a little sugar to put away the tartness, then drink it. "When the sweat taketh you, keep you warm, and by the Grace of God ye shall be whole."

The Royal College of Physicians was founded in 1518, one year after the foregoing outbreak of plague above referred to. King Henry VIII was moved to do this, by the example of similar institutions in Italy and elsewhere, by Thomas Linacre, his physician, and by the advice of Cardinal Wolsey, so, whether or not Erasmus's letter to Wolsey put the authorities to shame, it would be quite feasible to suppose that the physicians thought it wiser to place medicine on a sounder footing.

Midwifery appears to have made very little progress up to the middle of the sixteenth century. In 1521, a doctor named Veites was condemned to flames in Hamburg for engaging in the business of midwifery. In the year 1500, the wife of Jacob Nufer, of Thurgau, a Swiss sowgelder, "being in peril of her life in pregnancy, though thirteen midwives and several surgeons had attempted to deliver her in the ordinary way", it occurred to her husband to ask permission of the authorities, and the help of God, to deliver her as he would a sow. He was completely successful and thus performed the first Cæsarean operation on the living patient, who lived to bear several children in the natural way and died at the age of seventy-seven.

Another sowgelder performed the operation of ovariectomy on his own daughter in the sixteenth century.

Turning the child was first practised in midwifery in this century by a Swiss or French surgeon, Pierre Franco, who also operated in strangulated hernia. He also introduced the operation of perineal lithotomy.

In 1618 the first "London Pharmacopœia" was published, although a work of this character had been previously published in Nuremberg about the year 1512. A student exhibited a recipe book, which he had compiled from the writings of the most eminent physicians of the town. He was urged to print it for the benefit of apothecaries.

Thomas Willis, 1621-1675.

Following upon the publication of the "London Pharmacopœia", Dr. Thomas Willis is mentioned later as having played an important part in the reform of pharmacology. He reflected that there was usually very little relationship between the means of cure and the physiological and pathological process to be influenced. Medicines were first given at random, dangerous drugs were prescribed to the destruction, not of the disease only, but frequently of the patient also. He accused some persons of prescribing dangerous medicines, not by any deliberation or by the guidance of any method, but by mere hazard and blind impulse. The object of Willis was to establish a direct relationship between the physiological and morbid conditions of the body on the one hand, and the indications for cure and the therapeutic means by which these were to be brought about on the other.

Dr. Thomas Willis was the first to attempt the reformation of *materia medica*. He was born in 1621 and died in 1675. It is interesting to note the remarks of Dr. Thomson in the "Life of Cullen", in which he says:

The state of *materia medica* during the end of the 17th and the earlier part of the 18th century was remarkable for four circumstances:

1. There was a great number of remedies recommended for the cure of diseases, many were inert and useless, and thus the practitioner was perplexed and confused.
2. The popular confidence in these medicines was irrational and extreme.
3. It was the custom to combine in one prescription a great number of ingredients. The pharmacopœias of the period contained formulæ which embraced, in some instances, from twenty-four up to as many as fifty-two ingredients.
4. There was no rational or logical connexion between the disease to be cured and the remedy with which it was treated.

There were others who worked for the reform of pharmacology after Willis. John Twelfer, a physician of Vienna, published an improved pharmacopœia (1657), rejecting many useless and improper medicines. Daniel Ludwig in 1671 published a work on useless and unsatisfactory drugs. He denied the virtues of earth worms, toads *et cetera*.

Skatological Medicine.

In spite of the many advances made in treatment by the use of active drugs introduced in the pharmacopœias, skatological remedies were applied in this century, and are still being used by the ignorant in some parts of Europe.

Dr. Baas, in "History of Medicine", says that urine is taken in the Rhine provinces in fevers instead of quinine. In the seventeenth century the old pharmacies of Germany contained, amongst other disgusting remedies, frog spawn water, mole's blood, oil of spiders, snake tongues, mouse dung, spirits of human brain, urine of newly born child *et cetera*. The dung of screech-owls was prescribed for melancholia, as also the dung of doves and calves boiled in wine.

Dog dung and fleas boiled with sage was a medicine for gout, and death sweat was used as a cure for warts. Clay or mould from a priest's grave boiled with milk was given as a decoction for the cure of disease. In Lincolnshire a portion of a human skull taken from the grave was grated and given to epileptics for the cure of fits. Dr. Baas says that in 1852 he saw in the shop of a pharmacist at Leamington a bottle labelled in the ordinary way with the words "moss from a dead man's skull". This was used as a snuff for headaches and nose-bleeding.

Sympathetic Cures.

A belief in sympathetic cures prevailed in the reigns of James I and Charles I. Sir Kenelm Digby professed to have introduced a method of curing wounds by powder and sympathy.

Dr. Pettigrew, in his "Superstitions of Medicine and Surgery", says that a Mr. James Howell, endeavouring to part some friends who were

fighting a duel, received a wound in the hand. The King sent one of his own surgeons to attend him, but as the wound did not make good progress, application was made to Sir Kenelm Digby, who first inquired if the patient had any article which had the blood upon it. Mr. Howell sent for the garter with which his hand had been bound, and Sir Kenelm dissolved some vitriol powder in water, and immersed the bloody garter in the solution. The patient was instructed to lay aside his plasters and keep the wound clean, and in a moderate temperature; in the meanwhile the garter remained in the solution. The wound healed. Sir Kenelm professed to have learned the secret from a Carmelite friar. He tried to prove that the spirit which emanated from the vitriol, became incorporated with the blood and there met the exhalation of hot spirits from the inflamed parts.

Weapon Salve.

During the same period, instead of anointing the wound, the knife, axe, sword or other instrument which caused the wound, was smeared with ointment and the weapon carefully wrapped up and put away.

A treatment for the cure of foul breath, was enacted by the person holding his mouth open at a cesspool, the greater stink having power to draw the less.

In 1787 there was published in Manchester a "Complete Herbal or Family Physician", giving an account of all such plants as were then used in the practice of physic with their descriptions and virtues. To cull one or two examples from this work, which is quite elaborately illustrated, will be sufficient.

Poley mountain grows to be about a foot high, much branched, with squarish woolly stalks, having two small white woolly leaves at a joint, not above half an inch long and scarce half so broad, blunt pointed, indented about their edges towards the end.

Its Virtues.—Poley mountain is opening and attenuating, good for obstructions of the liver and spleen, helps the dropsy and jaundice, provokes urine and menses, and is good against bites of venomous creatures, and it is an ingredient in the theriaca Andromachi.

Herbal.—Included in the virtues attributed to pomegranate is its efficiency in fluxes, hæmorrhages and bleedings, both inward and outward. It strengthens the gums, fastens up loose teeth, helps the falling down of the uvula, and cancerous ulcers of the mouth and throat.

The fruit is grateful to and strengthening to the stomach, stops looseness and the immoderate flux of the terms, and is useful in hot bilious fevers and gonorrhœa.

Balneology.

The treatment of disease by mineral waters and baths came into fashion and was used a great deal in Germany during the seventeenth century. Previously, baths impregnated with vegetable extracts and odours had been used, and even to the present day we see perfumed bath salts put up in beautiful bottles, gaudily labelled, and sold at exorbitant prices. Pine leaves, conium, lavender, hyssop are used as sedatives.

Mesmerism.

Frederick Anton Mesmer (1733-1815) thought that cures might be effected by stroking with magnets. He afterwards discarded the magnets and used his hands alone.

Mesmer was denounced as a charlatan by the Faculty of Medicine, though a government commission in its report admitted many of the facts. The art was successfully practised in England in 1830 by Dr. John Elliotson.

It is interesting to note that a Dr. Van Swieten, a famous clinician of the Vienna School of Medicine, introduced into his practice the use of perchloride of mercury internally in the treatment of syphilis.

William Smellie, 1680-1763.

There is a difference of opinion as to the age of William Smellie. McClintock in his memoirs gives his birth as 1697, Berdoo as 1680. Both agreed that he died in 1763. On his tombstone is inscribed: "This is Dr. William Smellie's burial place, who died March 5th, 1763, at 66." The dates given by Berdoo would lead us to believe that he lived eighty-three years.

To William Smellie we owe a debt of gratitude. He revolutionized the art of obstetrics, and many of his teachings still hold good today. He learned early in his practice to wait and be patient, and he taught this to his many pupils. He proved a great comfort to women in labour. He was unostentatious and willing to learn from others, and no doubt his love for mechanics must have been a great help to him in his work. A former pupil states how he was distinguished "for an uncanny genius in all sorts of mechanics, which, after having shown itself in many other improvements, he manifested in the machines which he has contrived for the teaching of midwifery". Smellie had many detractors; these included medical men of the day of some standing, and particularly a noted midwife, Mrs. Nihell, who practised in the Haymarket. He was accused of advertising, and a paper lantern with the words printed thereon, "Midwifery taught here for five shillings", was exposed to public view. He seems to have replied to this charge effectively.

He was described as a raw-boned, large-handed man, only fit to hold horses while the farrier shod them. Undoubtedly midwifery had at last become an art during this age. Following in the footsteps of Smellie, many became teachers, and excellent work was performed by many of Smellie's former pupils. Many maternity hospitals were founded, and it is claimed that their foundation was mainly due to the example, influence and teaching of William Smellie. Thus the British Lying-in Hospital was founded in 1749, the City of London Lying-in Hospital in 1750, Queen Charlotte's in 1752, the Royal Maternity in 1757, and two years after Smellie's death, the General Lying-in-Hospital, 1765.

Midwifery.

The Dublin Lying-in Hospital had, however, been founded earlier, namely, in 1745. Dr. Moss, its

founder, stated that it might afford facilities for clinical instruction and thus save students the necessity of resorting to Paris to learn this branch of the healing art.

Patients were evidently much prejudiced against the use of forceps, but by his success Smellie was enabled to overcome these objections and gain the confidence of the womenfolk, who were mostly confined earlier by midwives. So here again we have to thank Smellie for having done something in the interests of the medical man.

The women had an idea that if the surgeon were called in, it meant some terrible operation, commonly ending in the death of the mother or child, or both. Smellie was the first to investigate accurately the shape and measurements of the female pelvis, and the shape and measurements of the foetal head, paying special attention to the pelvic diameters. Smellie improved or invented a long and short forceps, and the present slip-in lock or joint used in most forceps today was his invention. He also introduced the second or pelvic curve, thus the long double-curved forceps. He devised the double crotchet, the sheathed crotchet and perforating scissors.

His patience, observation and judgement in difficult labour would prove a splendid example to some of us today. It was a common practice for him to stay with a patient for a short while, and having satisfied himself of no untoward difficulties, but just a tiredness or primary inertia, to give a dose of opium and order a warm drink and a bun, and depart, saying he would call back in a few hours.

With the introduction of antiseptics, asepsis, the training of maternity nurses, and the better equipment of maternity hospitals, midwifery as an art made progress again, late in the nineteenth century, when more attention was paid to antenatal treatment, and students and nurses were instructed more fully in the care of the child and in infant feeding as well.

George Ernest Herman published the first edition of "Difficult Labour" in 1894, and I think most of us feel that we owe much to him for having given us something concise and to the point. He pointed out that this was his object, and we were told of many alternatives in the treatment of difficult cases, but not always which was the best. Herman always seemed sure of his work. He always had an answer ready and would rattle it off in a low monotone. He lectured in the same way—thorough, earnest, and undoubtedly dogmatic. He differed from his contemporaries in the treatment of eclampsia, gave morphine, and contended that labour should not be hurried and that emptying the uterus did not stop the fits. He was nevertheless a great obstetrician and gynaecologist.

The Eighteenth Century.

To revert to the eighteenth century. I should like to refer to Dr. John Coakley Lettsom (1744-1815), who was not only a great physician, but a philanthropist and a wag. He published several

important works on medical and other scientific subjects. He was not so unfeeling as the following verse would make him appear.

When patients sick to me apply,
I physics, bleeds and sweats 'em.
Sometimes they live, sometimes they die.
What's that to me, I lettsom.

Another version I read some years ago, I forget where.

When patients come to I,
I physics, bleeds and sweats 'em,
And should they chance to die,
It's their affair, I Lettsem.

Nevertheless he gave away immense sums to charity.

In the early years of the nineteenth century modern science had its indirect effect on the progress of medicine. The people became more educated and reasonable. Machinery began to take the place of hand labour in industries. In 1829 locomotive steam carriages were employed on railways at Liverpool. The slave trade of England was abolished in 1807. In 1834 the English Government began to make annual grants in aid of education. Sanitary commissions were appointed in 1838 and 1844, which were of benefit not only to England, but to other countries, in suggesting the means of improving health and combating the ravages of preventable diseases.

Birkbeck founded mechanics' institutes, thus raising the mental condition and standard of education of the labouring and lower middle classes. Schools sprang up, books and newspapers were multiplied. Berdoe's comment on the advance of science is that science has probably done greater service to the healing art by that which it has taught doctors to leave undone than by what it has taught them to do.

It has arrested the murderous lancet of the blood-let, stayed the hand of the purger, who merely bled in another manner; it has rescued the unhappy victims of mental disorders from their dungeons and the cruel lash of their keepers. It has liberated the invalid from the medicine monger.

Homœopathy.

Homœopathy about this time became most popular. The administration of small doses appealed to the people who had hitherto been subjected to enormous doses. Boluses, clysters and concoctions made up of thirty or forty ingredients were replaced by small pills, powders *et cetera*, not only easier to take, but much cheaper.

The following is a copy of an account for medical treatment by an apothecary.

An emulsion 4 6	Another bolus 2 6
A mucilage 3 4	Another draught .. 2 4
Jelly of 4 0	A glass of cordial
Plaster to dress blister 1 0	spirits 3 6
A clyster 2 6	Blister to arm 5 0
An ivory pipe 1 0	The same to wrists .. 5 0
A cordial bolus 2 6	Two boluses again .. 5 0
The same again 2 6	Two draughts again .. 4 8
A cordial draught .. 2 4	Another emulsion .. 4 6
The same again 2 4	Another pearl julep .. 4 6

The whole account for five days amounted to £17 2s. 10d.

Samuel Hahnemann (1755-1843), the founder of homœopathy, was born at Neissen, near Dresden. He studied medicine at Leipzig and afterwards at Vienna, and graduated at Erlanger. In his first treatise on medicine he stated that he thought most of his patients would have done better had they been left alone.

In a letter to Hufeland in 1808, upon the necessity of a regeneration in medicine, he declares that after eight years' practice he had so learned the delusive nature of the ordinary methods of treatment as to be compelled to relinquish practice. He devoted much time to the science of chemistry.

Berzelius said of him he would have been a great chemist had he not been a great quack. Hahnemann designated allopathy the method by which it is attempted to remove natural disease from one part by exciting artificial disease in another, or the principle of counter-irritation. Homœopathy could at best be described as a symptom coverer. Anatomy and physiology were superfluous and the causes of disease a negligible quantity.

Hahnemann taught that all chronic maladies proceed from the itch. Amongst other remedies for the itch, the swallowing of lice or of a decoction of them was recommended, because these parasites tickle the skin, and on the like-cures-like principle would be beneficial for itch.

Anatomy.

In 1832 an *Anatomy Act* was passed in England in order to control the supply of bodies in a legitimate manner. Inspectors of anatomy were appointed and various regulations were made for the decent and reverent disposal of remains. This Act was passed in consequence of the scandals connected with the Anatomy School at Edinburgh. It was discovered that a murderer named Burke provided bodies for surgeons by killing his victims by suffocation and leaving no marks of violence. The crime was known as burking, and to remove the temptation to such scandals as the robbery of graveyards and the murder of persons for the sake of the prices paid for their bodies, the wants of the surgeons were provided for in a legal manner.

Nursing.

Florence Nightingale, born in 1820, on her return from the Crimean War was responsible for the reform in nursing, the working of hospitals, schools and reformatory institutions. Mrs. Wardroper was a colleague of Nightingale and served in the Crimean War. She was the first Superintendent of the Nightingale School of Nursing and the original trainer of technically educated nurses for hospitals and infirmaries.

Insanity.

On the treatment of insanity we find that probably lunatics were treated with kindness in the earlier life of medicine.

Tuke praises the sound principles on which Hippocrates and Galen treated insane patients.

However, in the middle ages and up to the end of the eighteenth century the insane were treated shockingly. All sorts of instruments of torture were used; they were starved and even executed. The Germans seem to have exceeded all other nations in the ingenuity of torture which they sought to inflict upon their patients. One "humane" doctor invented an excruciating form of torture, in the shape of a pump, worked by four men, which projected a stream of water with great force down the spine of the patient, who was firmly fixed in a bath made for the apparatus. Terror, cold water, shower baths, horrible noises, smells and darkness were employed by the faculty up to the beginning of the nineteenth century.

The insane wore iron collars and belts and had no medical treatment, but baths of surprise and occasional floggings. This state of things existed in England up to as late as 1850.

The keepers at Bedlam Asylum were allowed to augment their income by exhibiting lunatics at a penny or twopence a head.

The Nineteenth Century.

Having lightly traversed a field bringing us to the nineteenth century, I refrain from introducing anything that occurred subsequently, with the exception perhaps of the progress that has taken place in the treatment of cancer, of tuberculosis, and of mental defectives.

Cancer.

Cancer in the earlier days was treated by the application of infusion of herbs, such as violet leaves, marshmallow and many others, in addition to very imperfect surgery, cauterizations and the administration of inert drugs; and in the interval between then and now, by bold surgery. In this field of operation radium and X ray treatment have so asserted themselves that one can justly and confidently hope for far better results. The radiologist will play probably as important, if not a more important part in this dread disease than the surgeon. In skin cancer of most types we find a cure in radium. In cancer of the tongue, formerly one of the saddest pages in surgery, we find that patients have done remarkably well.

Many of us have seen in the past the splitting of the lower jaw operation of Kocher, division of all the intervening muscles, extirpation of the glands. You have also seen the radical operation of excision of the breast and many other drastic surgical procedures. Are we hoping for too much when we can see in the future such technique in irradiation as will exclude the necessity of such measures? It is quite possible that by sufficiently barraging the field after excision of a growth, or in many instances without excision, results will prove just as successful at least as the present radical operations have proved.

Forbes Ross, an English surgeon, published in 1912 "Cancer, the Problem of its Genesis and Treatment". The gist of his treatment was based on the

theory of deficiency of potassium salts in those who were afflicted with cancer. He relates many cases in which the patients were subjected to this treatment in addition to irradiation. In one recurrence took place within one year. The recurrences were treated by the internal administration of potassium salts and subcutaneous injections of iodine. Ross avers that there was no mistake in diagnosis; sections of the growth were taken and examined. This author was no mean pathologist or bacteriologist, he seemed keen on both, but his theories were evidently ill received. He was also sensitive to the criticism.

The treatment of cancer by the method recommended by the author in this book has not one single element in it which will prevent its being used concurrently with any surgical procedure with which the stereotyped and dogmatic teachings of the past have imbued medical opinion and treatment. Summed up in the treatment was: (i) excision of growth, (ii) irradiation, (iii) administration of potassium salts.

Radiotherapy.

X ray and radium fields are in a state of infancy, and even the known rays have not been fully exploited, and there seems to be no limit to sound and hopeful expectations in the future.

In many cases of metrorrhagia due to fibromyomata and ovarian trouble radium and deep X ray therapy have proved efficient, thus obviating the necessity of major operation. I have witnessed the disappearance of large goitre within a fortnight of the application of deep X ray therapy.

Tuberculosis.

We have seen in the modern treatment of tuberculosis many changes: open air with heliotherapy, complete rest with suitable climatic conditions, phrenic evulsion, pneumothorax, thoracoplasty *et cetera*, with very excellent results and a diminished death rate, although in regard to thoracoplasty one is as yet unable to venture an opinion. It seems to me that the principles of preventive medicine must be invoked, and greater care in the instruction and control of suspects and contacts must be observed. Your Council has appointed a committee to investigate the best means of controlling tuberculosis within this State.

Habitual Criminals and Mental Defectives.

You have read of the earlier treatment of habitual criminals, the want of consideration shown them in the past. Are we to expect any amelioration or benefits from reformatory measures? Will the policy of the humanitarian prove a State asset from an economic point of view or will it fail, to give place to the introduction of legislation for the lethalization of these beings? The menace of the habitual criminal has been so pronounced in America and other countries that we in Australia fear that immunity cannot last long; in fact there are many gangster murders, robberies and other depredations which, if not nipped in the bud, will

allow us to be overrun by such ruffians as are permitted to live in other parts.

With regard to mental defectives, there can be but one opinion: sterilization should be law; and one cannot conceive that it has not become law in every civilized country ere this. Many uncivilized peoples have destroyed and make a practice of destroying their mental defectives.

Pharmacy.

The progress of pharmacy and of pharmacology has been most marked, especially within the last few years.

Numerous old bulky preparations have been discarded and those more palatable and more easily administered have taken their place, in the shape of tablets, capsules, globules, cachets, pilules, lozenges, hypodermic injections, so that it is seldom that a pharmacist lives on his shop premises, as in the days when the familiar red lamp remained alight all night. Practically all that is necessary in emergency can be carried by the medical practitioner in a small bag. Many of the old drugs still hold their own, such as the bromides, iodides, opium preparations, strychnine, belladonna, ammonium, mercury *et cetera*, whilst among the more modern the barbituric acid combinations have proved most useful. Numbers of these drugs are now prepared in Australia. The Commonwealth tariff has stimulated the wholesale manufacturing chemists of Australia to activity in producing just as efficient an article as that manufactured abroad and at half the price.

The Oath of Hippocrates.

The so-called oath of Hippocrates is a witness to all time of the high spirit which inspired the medical profession of the day. The oath enacts that the physician, among other things, is to help the sick according to his power and knowledge, to abstain rigidly from every evil, criminal abuse of the means and instruments of his art; to supply no poison, to keep inviolable silence about the secrets which he learns in his calling, or even outside it.

It is enjoined that the physician should have good manners, dress neatly and avoid perfumes; he must be temperate, honourable, humane, just, modest, affable and clean. He must oppose fraud and superstition, show courage in adversity; he must have a due sense of the divine power and recognize that to heaven he owes success. In addition, he must have a good bedside manner and must be calm and equable, even when those around him are agitated and excited.

One of the great surgeons of the present day, in addressing students, stated: "Do not allow yourselves to be carried away by too much sympathy; your nervous system may suffer. It is better to adopt a tone of healthy indifference."

Leckie's three great rules of life apply to medical men equally with others: (i) To live wisely, (ii) to do no one an injury, (iii) to acquiesce patiently in the inevitable.

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OBSERVATIONS ON THE FILTRATIONS EMPLOYED
IN RADON THERAPY.¹

By R. KAYE SCOTT, M.D. (Melbourne),
 Assistant to the Honorary Radiotherapist,
 Melbourne Hospital.

I MUST thank the Director-General for the honour he has done me in asking for a further paper in this field. In the previous paper⁽¹⁾ I dealt with the general uses of radon. I discussed its advantages and disadvantages as compared with its parent element, and finally gave a brief survey of various regional techniques used in radon therapy.

As the Commonwealth Radium Laboratory is supplying radon in needle form in three distinct degrees of screening, this communication will deal briefly with the question of filtration in treatment. The indications for the use of each needle will be considered.

Needles are supplied of screen equivalent to platinum 0.4 millimetre, 0.5 millimetre and 0.8 millimetre. As required, these vary from one to twelve centimetres in length, except in the case of those screened to 0.8 millimetre equivalent; these are made wholly of gold, and the maximum length so far used is three centimetres.

The needle of 0.4 millimetre platinum equivalent screening was adopted for general use soon after the Commonwealth Radium Laboratory was opened. The small external diameter of this needle is a great advantage. Tissue damage during introduction is therefore reduced to a minimum. The needle is made in any desired length and can be readily bent or shaped to coincide with irregular tissue planes.

The risks of diminished screenage are well known. They include the increased tendency to radionecrosis from the use of β rays, the tendency to delayed healing following radiation, and the increased radio-resistance of the neoplasm in the event of recurrence. Tissue damage from β irradiation is subsequently manifest as a thickening of the radiated area, due to a fibrotic tissue response.

As healing is largely dependent on a good blood and lymphatic supply, these needles can be used in any area which has rich vascular connexions.

The vascular response to radiation is partly due to a paralysis of the contractile elements of the capillaries and arterioles. Excessive β or γ radiation causes this period of paralysis to be greatly prolonged, with the result that stagnation of vascular supply persists, healing is retarded, and the

liability of intercurrent septic infection is increased. Infection in such circumstances greatly predisposes to radionecrosis.

In normal individuals areas such as the dorsum of the wrist or the front of the leg are notorious as regions having poor blood supply. In elderly people suffering from vascular degeneration there is further lessening of circulatory power, and consequently greater risk of troublesome sequelæ following treatment of these or similar areas.

Regions such as face, lip, forearm or breast do not present these difficulties, and malignant lesions of these areas can be readily treated with a needle screened to 0.4 millimetre platinum equivalent.

The majority of patients with epitheliomata of the lip and rodent ulcers of the face come for treatment at an early stage. These lesions can effectively be dealt with in the out-patient department, where needles can be buried under local anaesthesia. The use of radon needles in the treatment of rodent ulcer is strongly recommended. The lesion is irradiated from below and deep infiltration is effectively checked; there is little scarring, certainly less than that resulting from pure β ray treatment. Little discomfort is experienced by the patient either during implantation or during the following days till the needles are removed.

Rodent ulcers respond to β radiation, but the response to γ radiation is even better. No harm results therefore in such a combination of these rays as is emitted by the 0.4 millimetre needle.

Lip and cutaneous epitheliomata also generally respond well to this form of treatment. The usual technique of placing needles one centimetre apart is adopted, and doses of six to seven days are used for needles of initial strength of two millicuries per centimetre.

A dose of six days is usually sufficient, giving 88.1 millicurie-hours per centimetre, but a dose of seven days may be given. This latter dose is the largest that the tissues will stand from this type of needle.

In situations in which a large mass of tissue is to be irradiated, such as a malignant breast, these needles may be used without ill effects. They may be placed in two or three layers, one layer perhaps of ten or twelve centimetre needles in or on the pectoral muscles, one stratum of needles in the plane of the centre of the mass, and one subdermal stratum irradiating the superficial involvement.

Long needles may be used with advantage in the axilla. On account of the presence of the axillary vessels theoretically it would be wise to use more heavily screened needles to obviate risk of vascular damage, but no such unfortunate complication has yet occurred.

In the supraclavicular region these needles should not be used. Even with radium needles screened with 0.5 millimetre of platinum, a neuritis of the brachial plexus is occasionally a distressing complication. Pain is agonizing and intractable, and muscular wasting has followed. This is probably due to an interstitial neuritis and the condition may

¹Read at the Third Cancer Conference, Canberra, March, 1932.

be aggravated by adjacent fibrosis followed by contraction.

If enlarged glands are present in close relation to the supraclavicular portion of the plexus, the use of needles screened to 0.8 millimetre is advised. The lymphatic vessels run both in front of and behind the plexus, and small glands may exist in close relation to the nerves. Radiation of the region is therefore necessary, but the possibility of such a complication should be kept in mind.

Full screening (platinum 0.5 millimetre) should be used in any situation where the blood supply is poor. Such an area as the dorsum of the hand might be mentioned. Ulcerative as opposed to hypertrophic lesions are the more difficult, but are fortunately rarer. The hand should be kept at rest during the reactionary period, and every effort made to avoid infection. Such an exposed area is particularly liable to pyogenic complications, and the risks of necrosis are thus increased.

In the proximity of bone it is always wise to avoid the use of any β rays, and full screening is therefore advocated. The mandible is prone both to malignant invasion and to radionecrosis. Necrosis of the ramus following treatment of extensive lesions around the tonsil is common. Some cases are undoubtedly due to prior malignant involvement either of bone or periosteum, but all cases cannot be so explained. In this situation it is therefore wise to use fully screened needles. The clinician is, however, between two fires; the fully screened emanation needles are so much thicker and are not so easily bent should necessity arise, while the thin needles are much more convenient both to the operator and the patient.

During the last year, increasing use has been made of radon needles screened to a 0.8 millimetre platinum equivalent. The needles are of pure gold and are available in lengths of one to three centimetres. The diameter of the needle is little different from that of the 0.5 emanation needle made of gold and nickel.

The type of radiation emitted from such a needle is a pure and hard γ ray. Tissue destruction is therefore at a minimum, and the effect on the malignant element is maximal.

These needles have been used, for example, in areas with impoverished vascular connexions. Lesions which have resisted ordinary doses with smaller screened needles, or other forms of treatment, such as diathermy, are difficult to deal with. Such neoplasms are frequently complicated by surrounding fibrosis, ulceration or sepsis. Further radiation in the ordinary course of events might cause breakdown of the whole area. The presence of bone, either involved or necrotic, is an additional problem. In such cases the use of heavily screened gold needles has given some surprising results. It is as yet too early to say whether these will be permanent, but the indications are favourable. Doses of 200 to 240 millicurie-hours per centimetre have been given.

It has been demonstrated that a hard γ ray is a much more potent therapeutic agent than a soft

γ ray, or a combination of β and γ rays. It is evident, therefore, that progress must lie in the direction of increasing screenage, but the economic factor must be taken into account.

Little has been said about the radon implant whose screening is of the platinum equivalent of 0.3 millimetre. During the year no work has been done with these except in association with surgery of access. Here they are either placed or sewn into position, the wound is resutured and the implants left permanently *in situ*. The reaction is fairly intense, but generally the tissues will withstand radiation from an implant if the initial strength be not greater than 1.5 millicuries.

In America such implants have been largely used in the treatment of secondarily involved glands of the neck. The glands are exposed and the implants systematically buried. The difficulties in exposing all the involved areas and in effecting radiation of the involved but not obviously enlarged glands at the periphery of the malignant field appear to be objections to this method. Such cases have therefore been treated by the direct implantation of long needles into the gland areas. Providence appears to exercise a special care for the radiotherapist who buries very long needles among very vital structures.

Screens of 0.4 millimetre are quite adequate for many purposes, and these needles possess definite advantages for certain types of work. No doubt uniformly better results would follow the general use of heavily screened needles, and progress will be made with the more general use of such needles. It is probable, however, that the less heavily screened needles will maintain a definite place in the radiotherapeutic armamentarium.

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RADON VERSUS RADIUM: A PRELIMINARY REPORT.¹

By H. A. McCoy, M.B., Ch.M. (Sydney), D.M.R.E. (Cambridge),

Honorary Radium Therapist, Adelaide Hospital.

DURING the past twelve months there has been available at the Adelaide Hospital a supply of radon which has been used in the treatment of squamous epithelioma of the skin. For the greater part early lesions have been selected for treatment with radon for two reasons: (i) The radon apparatus available has been deemed suitable only for relatively small lesions; and (ii) it was considered desirable to study the effects of radon (filtered with 0.5 millimetre of nickel) and to compare the results obtained in similar cases treated with radium (filtered with 0.5 millimetre of platinum).

Technique of Preparation.

The supply of radium available for extraction of emanation is in the form of radium chloride in solution, and it is equivalent to 300 milligrammes

¹ Read at the Third Cancer Conference, Canberra, March, 1932.

of radium element. From this source a regular weekly supply of 100 to 120 millicuries has been maintained.

Exhaustion of the apparatus is achieved by means of the combined effects of a two-stage Gaede mercury diffusion pump backed by a reliable oil exhaust pump.

Purification of the mixed gases which diffuse into the collecting apparatus comprises only two processes: (i) Heating to red heat an oxidized copper wire placed in the path of the gases. This removes both hydrogen and oxygen. (ii) Passage of the gases over caustic potash which is fused on to the walls of the purifying chamber; by this means carbon dioxide is removed.

The relatively pure gases are then concentrated into a glass capillary, the bore of which is about 0.5 millimetre in diameter. The concentration is achieved by raising a column of mercury through the apparatus to the base of the capillary; and the degree of concentration is fairly stable at 1.5 millicuries per centimetre of length.

A secondary filter in the shape of a nickel sheath of wall thickness 0.5 millimetre ensheathes the glass capillary. The apparatus used for treatment is thus a nickel needle of external diameter 2.0 millimetres and of length required for particular purposes.

It will be observed that such a needle is bulky for introduction into the body tissues, and this bulk constitutes one objection to this form of apparatus. A second objection is to be found in the material used for filtration.

In order to observe strictly the requirements of Regaud techniques for the treatment of squamous-celled epithelioma, it would be necessary to employ filtration equivalent to approximately 0.4 millimetre of platinum, and this has not been practicable with our method of concentration. Unsuccessful attempts have been made to concentrate the radon gases into capillary gold tubing similar to that used at the Commonwealth Radium Laboratory in Melbourne.

We have been advised that in order to achieve this concentration it would be necessary to immerse the gases in liquid air in order to improve the purification and to utilize the same agent to procure concentration of the gases into the fine gold capillary. The absence of a regular supply of liquid air precludes the use of this refinement of technique.

The only method by which the required filtration can be achieved with our method seems to be, therefore, the substitution of the nickel tubing by a gold tube of wall thickness about 0.4 millimetre. The amount of gold tubing necessary would, we believe, increase the working costs to an impracticable degree.

In the present state of our experience we feel that we should achieve the best results in the radon treatment of squamous epithelioma by employing interstitial methods agreeing in principle with the standards enunciated by Regaud. It is for this reason that we offer for your consideration and criticism the difficulties which we have encountered.

Results Obtained with Nickel Filtration.

Interstitial Technique.

It has been our custom to treat epithelioma of the face by interstitial methods as a rule, and when radon has been employed, the nickel needles containing 1.5 millicuries per centimetre of length have been embedded and removed on the seventh day. The dose of radiation has been equal to or slightly less than that which would have been used had platinum radium needles been employed for the same lesion. In the earlier cases of the series smaller doses were employed, but the frequency with which the lesion failed to resolve seemed to indicate that a larger dose was necessary. Even with treatment for seven days we believe that incomplete resolution has occurred more frequently than when radium needles have been used for similar lesions.

Delayed healing and radionecrosis have been observed in an unduly large proportion of cases. This may have been due, of course, to the caustic action of β rays which pass through the nickel into the tissues.

The scars, even in lesions which have reacted favourably, have been too frequently large and at times unsightly. This may be attributed, we believe, to the large diameter of the needles and to the formation of fibrous channels in the needle tracks. Such localized cords of fibrosis would perhaps result from minor degrees of focal necrosis.

Patients Treated.

Since April, 1931, a number of patients have been treated with radon, some in conjunction with other forms of treatment, but for purposes of this short survey only those who were treated primarily with radium needles are considered.

The following facts indicate in tabular form the effects and immediate results of radon treatment. No patient has been observed for more than eleven months, and hence the terms used in classifying the results should be clearly understood. "Satisfactory" indicates that the lesion has reacted normally and has resolved with a supple scar; the period for which it has remained healed is not considered. "Residuum or recurrence", "indurated scar" and "necrosis" are self-explanatory.

For purpose of comparison a group of twenty-four patients treated with radium needles (platinum filtered) during the same period has been selected at random. In each case a biopsy was obtained. The histological diagnosis was epithelioma in forty-one and rodent ulcer in eleven cases. The groups have not been segregated, as they are small, and no further information was to be gained by considering them separately.

It will be observed from a short consideration of Table I that the percentage of satisfactory scars following treatment with radium needles exceeds greatly that following treatment with radon by the method described. The features of greatest import, however, are the relatively higher percentages of

TABLE I.

Treatment.	Number.	Satisfactory.	Healed with Indurated Scar.	Residuum or Recurrence.	Radionecrosis.
Radon needles (screen 0.5 millimetre nickel)....	28 100%	9 32.2%	10 35.7%	6 21.4%	3 10.7%
Radium needles (screen 0.5 millimetre platinum) ...	24 100%	21 87.5%	2 8.3%	1 4.2%	1 (Same as under residuum)

recurrences and radionecroses after radon treatment. From this observation it follows that in our experience secondary treatments have been required more frequently when radon has been employed for the treatment of the primary lesion than when radium needles have been employed for a similar purpose. Such a necessity for secondary treatment is obviously undesirable.

It should be noted that in coming to a decision regarding the presence of a recurrence or a radionecrosis it has been our custom to make a biopsy. The histological appearances have therefore provided the deciding factor.

Conclusions.

It will be obvious that our experience with radon in the treatment of epithelioma of the skin has been far from satisfactory. We have failed to procure the supple and almost invisible scars which result after treatment with platinum radium needles in a large proportion of cases, and the necessity for secondary treatments has been, we believe, too frequent.

Muir has stated that, given adequate filtration (as in the tubes which bear his name), radon needles may be employed in all cases in which radium needles have been used in the past, and this appears to have been the experience of other workers in many countries.

It may be relevant in this connexion to quote another of Muir's observations on the use of radon. Platinum-filtered removable radon needles are to be preferred to the older type of permanent implant, owing to the small but not negligible amount of residual radiation in the latter after the ordinary decay period has elapsed. This residual radiation is obviously undesirable.

It seems that in order to achieve the most satisfactory results with radon it will be necessary to discard from use not only permanent glass capillary implants, but also removable implants which are filtered with less than the equivalent of 0.4 millimetre of platinum.

Acknowledgements.

We wish to record our thanks to Professor Kerr Grant for the helpful advice which he has always offered in an endeavour to solve our difficulties, and to Mr. Turner, of the Commonwealth Radium Laboratory, for his valuable advice based on his experience in the preparation of radon.

RADON ADMINISTRATION.¹

By NOEL TRACY BULL, M.B., Ch.B. (Melbourne),
Medical Superintendent, Austin Hospital,
Heidelberg, Victoria.

THIS paper is a short review of radon administration in fifteen cases of gross malignant disease during the past nine months at the Austin Hospital for Chronic Diseases, Heidelberg, Victoria.

In presenting this brief paper to the Third Australian Cancer Conference at the request of the Director-General of Health, I must point out that our experience of radon treatment is comparatively small and recent.

At the Austin Hospital we have new and modern wards, at present accommodating eighty-three patients with cancer. Our patients are all completely or almost completely bedridden, and fall into two main classes: (i) Those who have been treated to the therapeutic limit at other metropolitan hospitals and are suffering from recurrences, metastases, or both, and need constant hospital treatment. (ii) Patients with more or less neglected and advanced disease, deemed to be in the main untreatable and also requiring constant hospital treatment.

Consequently the percentage of our cases suitable for radium therapy is rather small, and our short series of patients treated by radon consist of those with gross cancer in whom the prospect of success was deemed at the outset rather remote. Naturally we do not attempt to claim anything in the nature of permanent cure, but only temporary and gratifying relief. In our opinion it is of obvious benefit to both patient and attendants if, for example, a foul smelling carcinoma of the breast be at least temporarily healed; and it is in this connexion that we have found radon extremely effective. Also, as we have our own limited radium supply, only one-quarter of our radium treatments have been conducted with radon, and radon has been used often in conjunction with radium.

Emanation Therapy.

Since the full activity of radium depends on the formation of emanation and its subsequent disintegration, this gas, separated from its parent, can be used as a source of radioactivity for therapeutic uses. However, a preparation of radium emanation or radon differs from one of element in that, as it

¹ Read at the Third Cancer Conference, Canberra, March, 1932.

disintegrates, the emanation destroyed is not replaced; so that we have a constantly decreasing as opposed to a constant intensity of irradiation. The rate of destruction of an emanation preparation has been estimated at approximately one-sixth per day, so that in four days it will be only half its original strength. This disadvantage of radon treatment, namely, the lack of an accurately measured constant intensity of irradiation, is offset by two particular advantages: (i) Accident to or loss of an emanation container is of no financial moment; (ii) technique can be made more flexible, as the preparation of emanation apparatus lends itself to the adaptation of variations in technique in particular cases.

Types of Applicators.

Radon is supplied to various registered hospitals by the Commonwealth Radium Laboratory, Melbourne, in the following three types of containers and screenage:

1. Implants, gold capillary tubing. These have a screenage of 0.3 millimetre of gold. They have a strength of 1.5 millicuries and measure five to six millimetres in length.

2. Needles consisting of nickel tubing in which is inserted gold capillary tubing containing the radon. The screenage is 0.4 millimetre of platinum equivalent in the standard needle, and they contain two millicuries per centimetre length of needle. Variations in screenage, length and character may be obtained if desired.

3. Tubes: (a) For packs and moulds brass tubing is used. It has a screenage of 0.7 millimetre of platinum equivalent of ten millicuries strength. (b) For uterine treatment nickel tubes and pure gold tubes are used. Nickel tubes have a screenage of 1.0 millimetre of platinum equivalent of ten to twenty millicuries strength. Pure gold tubes have a screenage of 2.5 millimetres of platinum equivalent of five to fifteen millicuries strength.

A consideration of the available apparatus supports the above contention that variations in technique in particular cases may readily be obtained by the use of radon. We have had experience of only the first two types of applicators, namely, implants and needles.

Dosage.

As the intensity of irradiation of an emanation preparation is constantly decreasing, and as the rate of decay is known, the total quantity destroyed can be calculated and the irradiation expressed in millicurie-hours. However, the dosage expressed in physical terms is probably not so important as the cumulative experience which permits the operator to estimate the appropriate dosage and the form and number of applicators in each particular case.

In our series it has been the custom to remove needles containing radon after one hundred and twenty hours' implantation, and in some cases we have used radon in conjunction with radium where extensive irradiation was considered necessary.

Short Review of Cases Treated.

For the sake of brevity wearisome clinical details have been omitted in the following short review of cases treated.

Carcinoma of the Breast. There have been five cases of a gross nature; the usual technique and types of applicators were employed. Two patients died of other causes, one of diabetic coma, the other from a cerebral hæmorrhage. Two cases have a duration of two to three years. The two patients are still in hospital, one with the breast healed, the other with the breast nearly healed. There is one case with a duration of two years. The patient was discharged six months after treatment, with the lesion completely healed. There was a pleural effusion up to the level of the sixth rib, shown by X ray examination on discharge to have disappeared. The patient is alive and well four months after discharge.

Chordoma of the Sacrum. There was one case of chordoma of the sacrum. Implants were used after partial surgical removal on May 5, 1931. The duration is two and a half years. The patient is still in hospital. Excellent improvement has occurred. The lesion has healed except for a small sinus. The ultimate prognosis is poor.

Carcinoma of the Stomach. There was one case of carcinoma of the stomach. Implants were inserted. The duration was nine months. The patient died from hæmatemesis seven weeks after the implants were inserted.

Carcinoma of the Abdominal Wall. There was one case of carcinoma of the abdominal wall. The lesion was very extensive. This patient died from bronchopneumonia before any effect of treatment could be estimated.

Carcinoma of the Vulva. There was one case of carcinoma of the vulva with a duration of eight years. The patient was treated in January, 1932. She is still in hospital and the lesion is healing excellently.

Carcinoma of the Cervix Uteri. There was one case of carcinoma of the cervix uteri with a duration of six years. Radon implants were inserted *per vaginam* in December, 1931, into the broad ligament. The patient was discharged improved, but has since died from ulceration of the rectum and intestinal obstruction.

Sarcoma of the Femur. There was one case of sarcoma of the femur with a duration of five years. Implants were inserted; no appreciable effect was noted.

Carcinoma of the Tongue. There was one case of carcinoma of the tongue with a duration of six months. The patient, aged seventy-two, died from post-operative shock.

Recurrent Carcinoma of the Neck. There was one case of carcinoma of the neck with a duration of two and a half years. A large fungating recurrence was treated with implants and needles, also with radium, on October 16, 1931. A severe erythema developed. The patient was discharged from hospital with the lesion practically healed.

Carcinoma of the Face.—There was one case of carcinoma of the face with a duration of two and a half years. The lesion was a large neglected squamous carcinoma extending from above the zygoma to the mandible. Radon needles were inserted on December 22, 1931, combined with radium. The patient is still in hospital; the lesion has almost healed, and a further smaller irradiation will probably complete at least a temporary cure.

Carcinoma of the Anus.—There was one case of carcinoma of the anus with a duration of three years. Needles and implants were inserted on March 6, 1931. The lesion was practically healed on October 16, 1931, but the patient developed perineal fistula on January 11, 1932, and will require further irradiation.

Summary of Cases.

Of the fifteen patients with gross cancer treated by radon, three died from causes not associated with the malignant condition; four died from complications due to the malignant condition; eight are alive, comparatively well, and definitely benefited.

All of these cases were investigated for possible metastases and the diagnosis has in every case been verified by biopsy specimens.

Conclusions.

From our limited experience we are of the opinion that radon is of undoubted value in the treatment of cancer, used either separately or in conjunction with radium.

Wherever the lesion is not easily accessible, implants are of value, but it must be remembered that success depends on their accurate and homogeneous insertion, which is always difficult in dealing with a large tumour. Where possible, needles are to be preferred on account of more effective screening and because most authorities agree that a long source of irradiation is preferable to a short one.

Finally, in hospitals similarly situated to the Austin Hospital, with a small supply of radium, the Commonwealth Radium Laboratory, by supplying radon, serves a very real need.

Reports of Cases.

ALEUCHÆMIC LEUCHÆMIA.¹

By COTTER HARVEY, M.B., Ch.M. (Sydney),
Honorary Assistant Physician, Royal Prince
Alfred Hospital, Sydney.

It is probable that in no branch of internal medicine is greater confusion to be found than in the blood dyscrasias. In hæmatology the terminology appears to vary according to the author. A similar confusion exists in the allied if not closely related diseases of the fixed lymphatic tissues, and we find varying classifications from the clinical and pathological viewpoints.

One has only to consult Piney's book on hæmatology⁽¹⁾ to be dazed by the welter of synonyms of the blood diseases and to realize the increasing complexity that has arisen in the past decade in this field. Some authors, on the other hand, aware of the clinical maze which is growing apace, make brave attempts to simplify matters and do so by the simple process of denying the existence of some of the more recently recognized and described blood diseases.

The disease now known fairly generally under the paradoxical title of aleuclæmic leuclæmia is a case in point. The leuclæmias, whatever their ætiology and pathological classification, are still recognized in all text books, though under varying names. It is only within recent years, however, that cases with a low white blood cell count instead of the usual high count have been recognized as being a subgroup of the leuclæmias. The terminal leucopenia in leuclæmia has been known for a long time, but that there should be a persistent leucopenia throughout the whole course of the disease is not yet fully appreciated. Gulland and Goodall,⁽²⁾ in the latest edition of their book, make no mention of aleuclæmic leuclæmia. Clough,⁽³⁾ in a similar American standard work, only mentions "pseudoleuclæmia", a name that has been applied to cases of leuclæmia in an aleuclæmic stage. The term should be dropped.

On the other hand, Cabot,⁽⁴⁾ in Osler and McCrae's "Modern Medicine", recognizes "pseudoleuclæmia", stating that the number of proved cases is small, but steadily growing. Diagnosis, he considers, cannot be made without finding the characteristic changes *post mortem*. Vogel,⁽⁵⁾

in Nelson's "Medicine", also recognizes the condition. He states that no explanation can be given why the pathologically produced leucocytes fail to enter the blood stream. (Alternately, they may enter the blood stream, but leave it as rapidly as they enter it.) In acute cases, he states, diagnosis may be impossible without autopsy.

In journals and periodicals there has been slowly accumulating a series of cases, described by different authors and wherein the clinical picture has been that of a leuclæmia, acute or subacute, but where there has been an absence of any leucocytosis throughout the entire illness. In most the diagnosis has been confirmed by the finding *post mortem* of the characteristic leuclæmic infiltration of viscera.

Among the first to describe such cases was the late Dr. W. F. Litchfield,⁽⁶⁾ who reported thirteen cases of primary anæmia in children. Two among these, one aged nine years and the other six months, had persistent leucopenia with lymphocytosis of 95%. He classified them under the heading of lymphatic leuclæmia. It is noteworthy that in both patients the red cell count was below one and a half millions per cubic millimetre. Blankenhorn and Goldblatt,⁽⁷⁾ also in 1921, describe a patient whose blood count was absolutely normal, but who showed leuclæmic infiltrations of lymphatic type in skin and internal viscera. In 1925 Washburn⁽⁸⁾ found that several other cases had been reported, including one by Upjohn and Graham⁽⁹⁾ in Australia in 1922, though in this a leucopenia lasting for four months gave place to a rapidly increasing leucocytosis during the last month of life. He added two further cases with persistent leucopenia. In one the erythrocyte count ranged up to two millions; in the other it was over four millions on first examination and persisted over three millions until just before death.

Grove White and Davey,⁽¹⁰⁾ in 1929, recorded a case of "aleuclæmic lymphatic leuclæmia" with a white cell count of only eleven hundred per cubic millimetre, and stated their inability to find any similar case in the literature with such an extreme leucopenia. Hyland,⁽¹¹⁾ in 1930, noted that leuclæmia without leucocytosis was still a rare occurrence. He described three cases in which the lowest white cell count was one thousand one hundred and fifty. In only one case was there a persistently extremely low red cell count. Baldrige and Awe,⁽¹²⁾ in discussing one hundred and fifty consecutive cases of disease of lymphatic tissue or "lymphoma", included fifty-five cases of lymphatic leuclæmia. In only two of these was the leucocyte count persistently below five thousand.

The records of the Royal Prince Alfred Hospital during twenty-two years from March, 1910, to March, 1932, show that 163 patients with leuclæmia have been admitted to the wards in this period. Of these, 88 were diagnosed as suffering from chronic and seven from acute myeloid leuclæmia. Forty-three were diagnosed as suffering from chronic and 25 from acute lymphatic leuclæmia.

Among the last mentioned twenty-five patients were found all those whose case history appeared to warrant a diagnosis of aleuclæmic leuclæmia. (In no case of acute myeloid leuclæmia was there leucopenia.) No less than fourteen of the patients had persistent leucopenia during their stay in hospital. Five were infants under the age of eighteen months, who were removed from hospital *ante mortem* by their parents, three "against medical advice". In each of these cases there were lymphocytes ranging from 66 to 92 per centum of white cells. All patients had an extreme anæmia, with red cells less than 2,000,000 per cubic millimetre. Pathological proof is lacking, and though a provisional diagnosis of aleuclæmic leuclæmia might be warranted, some may have been in an aleuclæmic stage of acute lymphatic leuclæmia. Others may have been suffering from aplastic anæmia. None remained long enough in hospital for observation whether leucopenia was persistent, and the exact diagnosis of all must remain in doubt.

The ages of the remaining nine of these fourteen patients varied from seven to forty-one years. One, a boy of eight, died twenty-four hours after admission. Leucopenia, severe anæmia, enlarged glands and spleen were found, but at autopsy no leuclæmic infiltration was noted. This case therefore can be ruled out. A second patient, also a boy of eight, had only

¹ Read at the second annual reunion of the Residents' and Ex-Residents' Association, Royal Prince Alfred Hospital, Sydney, October, 1931.

one blood count while in hospital during eighteen days. Though the picture was characteristic, he returned to the country, and the absence of *post mortem* findings eliminates this case. A third patient, a man of twenty-seven years, despite typical blood counts, revealed no leucæmic infiltrations at autopsy. A fourth, a man of thirty, had neither enlarged glands nor enlarged spleen. Hemorrhages with severe anæmia and leucopenia were outstanding features, but he left the hospital alive, and the diagnosis cannot be substantiated.

There remain, then, five patients, including the one about to be described in full.

One a young man of twenty-one years, had repeated hemorrhages and pyrexia as conspicuous symptoms. There was leucopenia in all blood counts, with lymphocytes over 50%. Strangely, no anæmia was present. Typical leucæmic infiltration of viscera was found at necropsy. The second, a girl of fifteen years, had an enlarged spleen and recurrent hemorrhages. Red cells were persistently below two millions, while white cells averaged 4,000 per cubic millimetre, with an average lymphocyte percentage in ten counts of 86. She died thirty-six hours after having returned home, and pathological proof is lacking. But her case notes reveal a history so strikingly similar to that of the boy under the writer's care that she has been included.

In a third case, that of a woman of forty-one years, with characteristic aleucæmic blood pictures, biopsy of an enlarged lymph gland revealed a histological appearance "consistent with a diagnosis of lymphatic leucæmia".

Lastly, a boy of seventeen years, with a blood count showing nothing beyond a moderate anæmia, died after an illness of three weeks. At *post mortem* examination leucæmic infiltration was found in all the organs examined, including the bladder. This case is comparable to that described by Blankenhorn and Goldblatt.

It can fairly be stated, then, that of 163 patients with a diagnosis of leucæmia, five were of aleucæmic type. It is interesting to note that only one of these was found in the first 100 cases, over a period of seventeen years from 1910 to 1927.

The five years April, 1927, to March, 1932, have seen the admission of 63 patients, of whom four have been aleucæmic.

Examination of the hospital records harmonizes with the literature and goes to show either that aleucæmic leucæmia did not occur or that it was not recognized as such, at least until the year 1920. The hospital figures also suggest that leucæmia is increasing in frequency and that the aleucæmic form, though still rare, is becoming less rare. Whether this is due to more accurate diagnosis or whether other factors are operating, one can only surmise.

It remains now to mention that unhappy term coined in 1902 by Leube, leucanæmia, to describe a disease presenting the features both of leucæmia and of severe anæmia. It has met with general condemnation and appears unlikely to survive. Let it be noted, however, that of the cases described as aleucæmic leucæmia not all have a concurrent anæmia. Both of Dr. Litchfield's cases presented this feature, so also do two cases described by Goodhart and Still⁽¹²⁾ in their text book, under the term "acute lymphatic leucanæmia". The histories and blood counts of these four cases are practically identical with the case about to be described and with several of those cases in the Royal Prince Alfred Hospital records. They differ in some important details from other cases seen in the literature. Let it be granted for the sake of simplicity that in these there was an additional inhibition of red blood cell formation, resulting in a general blood cell aplasia, so far as the circulating blood is concerned, and let us leave them among the leucæmias.

All who have studied the literature agree on the difficulty in the diagnosis of acute leucæmias. Davey and Whitby,⁽¹³⁾ recording six cases, note the lack of agreement as to differentiation among authorities, cynically designating their attempts "an exercise in staining gymnastics". In humility we must in the ultimate analysis recall that apposite epigram the authorship of which I am unable to trace: "Nature does her best to conform to man-made classifications, but at times she fails."

Clinical History.

R.S., aged fourteen, a schoolboy, was first seen on September 19, 1931. Following an attack of influenza four months previously, he had become increasingly weak and had been short of breath on exertion. For the past three weeks he had not felt able to go to school.

For one month he had noted swellings in his neck, but was not sure whether they had increased in size. Only during the past three weeks had his mother noticed that he had been pale. He had bled profusely from the nose five days and slightly from the gums three days previously. He had lost 4.5 kilograms (ten pounds) in weight in the past four months.

On examination it was seen that he was extremely pale and obviously very ill. Enlarged glands were visible and palpable in both triangles of both sides of the neck. Axillary, inguinal and cubital glands were also somewhat enlarged. The spleen was felt to extend five centimetres below the costal margin. The liver was just palpable.

He had several carious teeth, but the gums were not spongy. The throat was not inflamed. There was no purpura. No abnormal signs were found in circulatory or respiratory systems. He was admitted immediately to the Royal Prince Alfred Hospital, with pulse 130 and temperature 37.4° C. (99.4° F.) on admission.

A blood count made on September 21, 1931, revealed the following:

Red cells, per cubic millimetre	1,130,000
Hæmoglobin value	25%
Colour index	1.0
Leucocytes, per cubic millimetre	3,120
Neutrophile cells	4%
Lymphocytes	95%
Monocytes	1%

One lymphoblast was seen. The majority of lymphocytes had an immature appearance. Anisocytosis was marked; macrocytosis was present and poikilocytosis slight. The coagulation time was four minutes, the bleeding time one and a half minutes. The platelets numbered 28,820 per cubic millimetre.

On September 22, 1931, he had a severe epistaxis, of almost one pint. Blood transfusion was decided upon and 600 cubic centimetres of citrated blood were given next day. His temperature now became more elevated, to 38.9° C. (102° F.) at nights, and he complained of a sore throat, though nothing in the nature of an angina was evident. A left-sided parotitis developed, also perianal abscess. His temperature rose to 39.4° C. (103° F.) and he was critically ill.

On September 30, 1931, his red cells numbered 1,380,000 per cubic millimetre, his leucocytes 1,040, and of these only 2% were neutrophile cells; 90% were lymphocytes. A second transfusion of 700 cubic centimetres of citrated blood was given on this day. This was followed by very slight improvement.

The subsequent course of the disease is best illustrated by the accompanying table. His temperature remained of a septic type, and minor sepsis was constantly present.

On one occasion a facial abscess was opened under kelene; persistent perianal sepsis caused considerable discomfort. It was noted on October 7 that the lymph glandular and splenic enlargements had entirely disappeared. Swelling recurred and subsided several times during his illness.

It will be noted that transfusions failed to raise either red or white cell count to any appreciable extent. The last transfusion was given solely to keep the patient alive over Christmas. He died rather suddenly of congestive cardiac failure on December 30.

Many treatments were given, without avail, but without harm. Amongst them may be mentioned irradiation of the spleen and twelve hypodermic injections, each of one cubic centimetre of "Nucléarsitol", the latter in a vain endeavour to stimulate a neutrophile leucocytic response. Liver was also given, but was poorly tolerated. Radiostoleum was given throughout.

Table Showing Examinations of Blood and Dates of Transfusions.

Date.	Colour Index.	Red Blood Cells. Number per cubic millimetre.	Leucocytes. Number per cubic millimetre.	Lymphocytes per centum.	Polymorpho- nuclear Cells per centum.	Other Cells.
September 21, 1931	1.0	1,130,000	3,120	95	4	1 lymphoblast
September 22, 1931	Transfusion of 600 cubic centimetres of citrated blood given					
September 30, 1931		1,380,000	1,040	90	2	8% monocytes.
September 30, 1931	Transfusion of 700 cubic centimetres of citrated blood given					
October 7, 1931 ..	0.9	1,680,000	900	80	16	3% lymphoblasts
October 14, 1931 ..	1.0	1,750,000	1,580	64	35	
October 20, 1931 ..	0.8	1,940,000	1,160	71	24	
October 26, 1931 ..	1.0	1,560,000	760	68	32	
November 2, 1931	0.8	1,310,000	1,160	56	40	
November 9, 1931	0.9	620,000	1,400			
November 9, 1931	Transfusion of 600 cubic centimetres of citrated blood given					
November 16, 1931	1.1	1,150,000	3,200	38	55	5% monocytes
November 24, 1931	0.9	740,000	2,300	95	0	
November 24, 1931	Transfusion of 600 cubic centimetres of citrated blood given					
December 1, 1931	1.0	1,000,000	2,500			12% monocytes
December 11, 1931	0.7	1,400,000	2,800	62	25	
December 18, 1931	0.7	1,000,000	6,000	90	4	
December 21, 1931	Transfusion of 600 cubic centimetres of citrated blood given					

Pathological Findings.

At autopsy there was revealed extensive fatty degeneration of the heart and other organs. The spleen was much enlarged, weighing 1,000 grammes. There was pallor on section; Malpighian bodies were visible. The liver was also enlarged, being 2,050 grammes in weight; on section it was very pale. Very few enlarged lymph glands were found. There were some in the inguinal regions and some around the head of the pancreas. In the shaft of the tibia the marrow had a pinkish grey colour, most marked in the upper end, becoming more yellow towards the lower end. Examination of the other organs revealed no changes of note.

The microscopical report, for which I am indebted to Dr. Geoffrey Davies, on stained sections was as follows:

1. *Lymph Gland.* There is very marked hyperplasia with sinus catarrh throughout the whole lymph gland. No germinal centres are seen. Many of the nuclei are vesicular.
2. *Spleen.* Immature lymphoid cells are seen infiltrating throughout the whole section.
3. *Kidney.* Patches of leucæmic infiltration are seen about the tubules.
4. *Liver.* Small patches of slight leucæmic infiltration among the columns of the hepatic cells.
5. *The Heart.* There are signs of toxic myocardial spoiling. The muscle fibres stain poorly.

Discussion.

The clinical diagnosis during life of aleucæmic leucæmia was made from the typical leucæmic symptoms of enlarged glands and spleen, accompanied by hæmorrhages, together with the blood picture. It was clinched by the finding at autopsy of the characteristic leucæmic infiltrations in various organs.

At the commencement, however, the differential diagnosis was interesting. The following diseases had to be excluded: (i) Myeloid leucæmia. The predominant type of leucocyte seemed to rule this out. (ii) Splenic anæmia. Among other reasons, the comparatively slight splenomegaly eliminated this blood dyscrasia. (iii) Agranulo-

cytic angina. This was unacceptable as, apart from the absence of pharyngitis, such a severe anæmia is not usually found and the blood platelets are rarely reduced, at any rate to such a low figure. (iv) Glandular fever. Hæmorrhages and severe anæmia with pathological red cells and leucopenia must be rare in this condition, if ever they occur.

A feature in the patient's illness was the constant presence of sepsis. Acute leucæmia is, of course, often related to infection, but this patient lived longer than would be expected of one with acute leucæmia. It is possible that his chronic infection may have been the cause of the persistent depression of leucocytes. What did appear remarkable was that with such profound neutropenia he was able to withstand at least two severe infections, one a parotitis and one a facial cellulitis.

The failure of all treatment was to be expected. It would appear reasonable to believe that the repeated blood transfusions prolonged life. It is noteworthy that they improved the red cell count only slightly and had no effect whatever on the leucocyte count.

A final comment may be offered on the fact that lymph gland and splenic enlargement were quite capricious. In the interim periods a clinical diagnosis of aplastic anæmia might have been warranted, while that of leucæmia would have been difficult to sustain. It is suggested that in severe anæmia with extreme neutrophile leucopenia, particularly when occurring in childhood, where the diagnosis is often in doubt, every endeavour should be made to have *post mortem* evidence available, if biopsy is impracticable. Thereby it may be found that aleucæmic leucæmia is more common than has hitherto been supposed.

Summary.

1. A case of aleucæmic leucæmia has been described.
2. Reference to the literature and to the Royal Prince Alfred Hospital records shows this disease to be a rarity.
3. The difficulty in the diagnosis of leucæmias and blood dyscrasias generally is noted.
4. Some comment is offered on differential diagnosis in relation to the case described.

5. It is noted that sepsis, though constantly present, did not in any way determine the issue, extreme neutropenia notwithstanding.

6. It is suggested that pathological examination by biopsy or autopsy in obscure anæmias may reveal that aleukæmic leucæmia is less rare than has been supposed.

Addendum.

To these remarks Dr. A. H. Tebbutt has been good enough to offer the following criticism:

I do not believe that there is any likelihood that his chronic infection was the cause of his leucopenia any more than it is, for example, in agranulocytic angina. In both the infections appear to be secondary; the important predisposing cause of the infection is almost certainly the leucopenia. I have seen a number of chronic leucæmias with large cell counts without infections of the skin and mucous membranes. I think the infections of the acute leucæmias have as the important predisposing cause the marked reduction of normally matured circulating phagocytes.

In your table there are some strange figures which one would like to understand, for example, on November 16 there were 55% polymorphonuclear cells, whereas on November 24 there were 0% polymorphonuclear cells. Are they to be attributed to the transfused blood which was given on November 19? Apparently not, because on November 2 there were 40% polymorphonuclear cells and no transfusion was given for over a month before that.

I am inclined to doubt very strongly your opinion as to the recent increase in aleukæmic leucæmias. They are probably tucked away somewhere in the hospital records under a different name.

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Reviews.

THE HEART AND SPLEEN.

"THE HEART AND SPLEEN IN HEALTH AND DISEASE", by G. Armour Stephens, is exceedingly difficult to read, unless the reader is feeling very pessimistic, because, if the author is right, almost all other authorities are wrong. He starts with the assumption, which he calls a fact, that the heart sounds are due to vibrations in the pericardial fluid, and that by using an aluminium filter funnel instead

¹"The Heart and Spleen in Health and Disease", by G. Armour Stephens, M.D., 1932; London: H. K. Lewis. Demy 8vo., pp. 140, with 6 illustrations. Price: 7s. 6d. net.

of a normal stethoscope chest-piece, he can determine the heart's condition by the character of the sounds. So far as we can gather, this is a very delicate method, for it detects the beginnings of cardiac damage in all children with coryza.

The usual methods of estimating blood pressure are also held to be wrong, and a new method is introduced of determining the basal pressure, on which a large number of sweeping conclusions are based.

In Chapter IV the author claims to show that auricular fibrillation, flutter and tachycardia are not distinct disease entities, but merely three out of twenty-four possible stages in the same type of disordered action. All that he does show in this chapter is that he prefers theory to fact, and that he is capable of self-hypnotism to an almost incredible extent. He also appears to confuse auricular fibrillation with heart failure. A fairly complete theory on the cause and cure of gastric ulcer is given, largely on the analogy of the effect of calcium on chilblains, and illustrated by a case in which the diagnosis is at least open to question.

The whole book is full of unsupported statements and vague theorizing, and can be of very slight value to anyone.

CÆSAREAN SECTION.

In an excellent little book, "Cæsarean Section", Frances Ivens-Knowles analyses 352 cases of the "low" classical operation.¹ Starting with an interesting historical survey of the most spectacular of surgical procedures, he takes the reader through a review of the immediate and remote risks, in the course of which representative statistics and opinions are given. A few pages on the question of "repeat" operations are followed by a lengthy and detailed account of the indications for and the results of the author's 352 cases. These are grouped in a clear and concise manner, and fairly full details are given of all morbid and fatal cases. The presentation of such a detailed analysis in a readable fashion is made possible by the interpolation of interesting cases and an excellent spacing of paragraphs and subjects. The book concludes with a minute description of the technique. This is essentially that of the "low" classical operation. Attention to small but important points in technique is a refreshing contrast to the vaguely general description of many of the operative surgery text books. Of particular interest is his modification of the operation to suit the "suspect" or potentially septic case. In the author's treatment of this type of case (the cause always of much worry to the obstetrician) the reader will find practical help.

In a subject over which so much difference of opinion exists it is natural that certain points and claims would cause considerable obstetrical wrangling, and the author's extensive field of indications for the operation and the late stage in labour at which many of the operations were carried out, would surprise many obstetricians. Honesty in the unbiased statement of facts, and an earnest desire to improve the prognosis of Cæsarean section are the most prominent features of a book which is at the same time readable and profitable to anyone with an obstetrical interest.

HUMAN KNOWLEDGE.

In "Cosmology", which he considers the next essential doctrine in human knowledge, Dr. Frank Trinca essays the task of applying to biology and sociology concepts allied to the mathematical concepts of relativity.² Mathematical physics is, he points out, comprehensible by few,

¹"Cæsarean Section: An Analysis of 352 Consecutive Cases of the Classical Operation, with an Account of the Technique Employed", by F. Ivens-Knowles, C.B.E., M.B., M.S., Ch.M.; 1931. London: J. and A. Churchill. Demy 8vo., pp. 88. Price: 5s. net.

²"Cosmology, the Next Essential Doctrine in Human Knowledge", by Frank Trinca, M.C., M.B., B.S., Section I; 1932. Melbourne: Robertson and Mullens. Crown 4to., pp. 49, with illustrations.

and therefore generally of little use in human problems. He claims that as a result of experiment he has deduced easily understood laws which are of vital importance to humanity and which will aid it to progress more rapidly than hitherto and to avoid the occurrence of such social disturbances as the present world-wide depression. These laws are cosmic in their origin and scope, and are the biological counterpart of mathematical relativity. Unfortunately, for some unexplained reason, he is publishing the work in sections, the first only of which is under review; this contains none of the promised experiments or laws, so that we can express no opinion of his success in his ambitious undertaking.

Section I gives an account of parts of some of the recent publications of Jeans and Eddington, and then the author deals at length with the phenomenon of sun-spots, which, he thinks, provide the key for an understanding of climatic and crustal disturbances of this planet, these disturbances being correlated with sun-spot activity. The earth being originally part of the sun, naturally continues the same rhythm of changes which it shared once with its parent. (Holmes and others have stated that earth movements are caused by the heat resulting from radio-activity in the lithosphere, but it is not clear that Dr. Trinca is referring to this theory.) Whether he is right in these assumptions is for the appropriate specialists in the various sciences to decide; to the layman, however, it seems far-fetched to relate to the same cause a thunderstorm in Sydney on June 25 and an eruption of Vesuvius on June 28. In the sun-spot process, moreover, which is itself the expression of a more comprehensive reality, he sees the explanation of the origin of conscious life, already foreshadowed in the behaviour of atomic quanta apparently endowed with free will.

In his references to an intuitive code of ethics, he runs counter to the best modern psychological theory, and his championship of vitalism will not meet with universal approval.

Dr. Trinca has an involved and verbose style which makes his book difficult to read. Nevertheless the section published has aroused our interest and we are curious to see how he will fulfil the promises made in it. We strongly urge him, however, to publish the rest of the work in one section.

THE CHEMISTRY OF THE EMBRYO.

It is a formidable task to endeavour to present in a short article a just account of the three volumes of over two thousand pages which go to make up "Chemical Embryology" by Joseph Needham.¹

The work opens with an excellent philosophical discussion on the various views on the mechanism of life in so far as they have a bearing on embryology. This is followed by a scholarly and unsurpassed review of the history of embryology in 180 pages. The rest of the text is made up of a very comprehensive and critical review of what is known of the chemistry of embryonic development. Finally, there is a bibliography of 250 pages and there are ample indices.

This is the first time an attempt has been made to collect the vast amount of scattered information regarding the chemistry of development and to examine and assess it in a thoroughly critical manner. The author has essayed a prodigious task and has succeeded in producing a work which must for many years remain a classic and a monument to his patient industry and erudition.

It is impossible in a short review to do more than give the headings of the principal sections: "The Unfertilized Egg as a Physico-Chemical System", "On Increase in Size and Weight", "On Increase in Complexity and Organization", "The Respiration and Heat Production of the Embryo", "Biophysical Phenomena in Ontogenesis", "General Metabolism of the Embryo", "The Energetics and Energy Sources of Embryonic Development", "Carbo-

hydrate Metabolism", "Protein Metabolism", "The Metabolism of Nucleins and Nitrogenous Extractives", "Fat Metabolism", "The Metabolism of Lipoids, etc.", "Inorganic Metabolism", "Enzymes in Ontogenesis", "Hormones in Ontogenesis", "Vitamins in Ontogenesis", "Pigments in Ontogenesis", "Resistance and Susceptibility in Embryonic Life", "Serology and Immunology in Embryonic Life", "Biochemistry of the Placenta", "Biochemistry of the Placental Barrier", "Biochemistry of the Amniotic and Allantoic Liquids", "Blood and Tissue Chemistry of the Embryo", "Hatching and Birth". In the section entitled "Epilegomena" are summarized the more important generalizations which arise from a consideration of the data presented in the rest of the text. The work is not always easy reading and is essentially one for specialists, but as a work of reference on a borderline subject it will be invaluable.

The author states in his "Prolegomena" that "physico-chemical embryology has so far been living an intrauterine existence . . . Physico-chemical embryology has indeed arrived at a stage immediately prior to birth, and all it needs is a skilful obstetrician". We may agree with the author that it "has passed through a successful parturition" and it has had a highly skilled obstetrician to see it into the light of day.

ANTE-NATAL CARE.

"ANTE-NATAL ADVICE TO THE EXPECTANT MOTHER", by Birdwood, is a sensible booklet for doctors to recommend to expectant mothers, or to use themselves at ante-natal clinics as a basis for their talks to mothers.²

The fifty-two short chapters are really lecturettes which contain all the information required on the subject. Dr. Birdwood explains clearly the benefits of ante-natal supervision without making his patients morbid. He repeats himself often and the subject matter could be condensed. His advice is sound and up to date, except that he has a definite aversion to meat and eggs, recommending their complete exclusion from the diet during the last two months of a normal pregnancy. In his typical diet he orders bread, puddings or porridge for every meal, and the abundance of carbohydrates would give most patients flatulent dyspepsia. Few general practitioners would agree with him on this matter of diet, but apart from this debatable question the booklet is admirably suited for its purpose.

SANITATION AND LAW.

In the eleventh edition of Dr. Burnett Ham's well known "Handbook of Sanitary Law", we find the subject matter brought thoroughly up to date and set forth in a way that justifies the popularity of this book amongst candidates for public health qualifications, for whom it is intended.³

Sanitary law is perhaps the least interesting and certainly the most important phase of public health control. Dr. Burnett Ham, aided by his wide experience as a medical officer of health, which included the chief control of public health first of all in Queensland and later in Victoria, has realized the need for simplifying the typical redundant and obscure legal phrases which are so baffling to the scientific mind. He presents thus the essence of the matter in a simple, accurate and concise form which is in every way fitted for the purposes of the student and even the busy medical officer of health. The work deals naturally entirely with English procedure, but as this is so often a model for legislation in Australia, it has a real value for local administrative officers.

¹ "Advice to the Expectant Mother: Fifty Ante-Natal Talks for the Use of Doctors, Nurses and Expectant Mothers", by G. T. Birdwood, M.A., M.D., D.P.H.; 1932. London: John Bale, Sons and Danielsson, Limited. Crown 8vo., pp. 93. Price: 2s. 6d. net.

² "Handbook of Sanitary Law for the Use of Candidates for Public Health Qualifications", by B. Burnett Ham, M.D., D.P.H.; Eleventh Edition; 1931. London: H. K. Lewis and Company, Limited. Foolscap 8vo., pp. 367. Price: 7s. 6d. net.

³ "Chemical Embryology", by Joseph Needham, M.A., Ph.D., Volumes I, II and III; 1931. Cambridge: The University Press. Royal 8vo., pp. 2021, with illustrations. Price: 5 guineas net.

The Medical Journal of Australia

SATURDAY, AUGUST 20, 1932.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

DIATHERMY AND PHARMACISTS.

WHEN a medical practitioner sets out to treat a patient by means of a special apparatus, several conditions must be satisfied. First of all, he must know what the patient is suffering from; he must have some knowledge of the nature of the disease, in other words, of its pathology; and he must have more than a nodding acquaintance with conditions that resemble it. He must also be able to manipulate his special apparatus, he must know something of its mechanism and he must understand the scientific principles underlying its action. He is able to recognize the disease, to gauge its extent and to make an attempt to foretell its progress as a result of his training and his clinical experience; and by study and attention to mechanical details he can soon qualify himself to use the apparatus. It is a much simpler matter to learn to manipulate a piece of mechanical apparatus than to understand a disease process. To attempt the treatment of disease without fulfilling the necessary conditions is, to say the least of it, immoral, and in certain circumstances punishable by law. Unfortunately the law is not always framed in such a way that treatment of disease is vested solely in the medically trained. There is no lack of non-medical persons

who will exploit the sick for monetary gain—persons who are entirely ignorant and unscrupulous, and those, equally if not more dangerous, who have a little knowledge and less moral sense.

During recent years many forms of special medical apparatus have been devised and have been sold by enterprising salesmen to medical practitioners in all parts of the Commonwealth. The sale of diathermy machines has been "pushed" perhaps more than that of any other apparatus, and diathermy is extolled as a treatment for almost every human ailment. The dangers and the temptations attendant on the purchase, the display and the indiscriminate use of diathermy machines by medical practitioners have been discussed in these columns and will be the subject of future comment. Diathermy machines, however, are being used by non-medical persons. The makers of these machines are not content with the extensive purchases they have prevailed on medical practitioners to make. They are selling them to pharmacists, and pharmacists of the counter-prescribing and post-counter-treatment type are buying them. Having bought them, they are treating sick persons for all sorts of conditions. It is only just to point out that the various official organizations and societies of pharmacists are opposed to this practice, but apparently they have no control over their individual members. Dr. George R. Hamilton recently wrote to this journal in reference to a patient who was treated by a pharmacist with a diathermy machine for a lesion on the back which subsequently revealed itself as a melanotic sarcoma. It is possible that surgical removal of the lesion, before it became malignant, might have saved the patient's life. Argument on this point is not important in the present discussion. What is material is that patients with serious pathological conditions are being treated by persons unqualified to undertake the treatment and ignorant of the pathology of disease. The matter has gone further. A suburban medical practitioner was recently asked by a local pharmacist to give an anæsthetic to a patient so that the pharmacist might treat the patient with diathermy. While we cannot imagine that any Australian general practitioner would comply with such a request, it is well to draw atten-

tion to the following warning issued by the General Medical Council of Great Britain.

Any registered medical practitioner who, by his presence, countenance, advice, assistance, or cooperation, knowingly enables an unqualified or unregistered person, whether described as an assistant or otherwise, to attend, treat, or perform any operation upon a patient in respect of any matter requiring professional discretion or skill, to issue or procure the issue of any certificate, notification, report or other document of a kindred character (as more particularly specified in Division I hereof), or otherwise to engage in professional practice as if the said person were duly qualified and registered, is liable on proof of the facts to have his name erased from the Medical Register.

It must also be remembered that the Medical Boards in Australia are influenced, if not guided, by the actions of the General Medical Council, and would take a serious view of an offence of this kind, were it brought to their notice.

Most members of the community and presumably most governments would recognize the iniquity of happenings such as that reported by Dr. Hamilton and the stupidity of putting up with a state of affairs which renders them possible. Whether the several governments would, in the interests of the general public, make any move to improve the state of affairs is another matter. The Federal Capital Territory is the only part of Australia in which adequate safeguards exist. The ordinance providing for the registration of medical practitioners in the Federal Territory contains the following clause:

(1.) A person other than a registered medical practitioner shall not (a) give or perform, for fee or reward, any medical or surgical service, attendance, operation or advice; (b) advertise or hold himself out as being, or in any manner pretend to be, or take or use the name or title (alone or in conjunction with any other title, word or letter) of a physician, doctor of medicine, licentiate in medicine or surgery, master in surgery, bachelor of medicine or surgery, doctor, surgeon, medical qualified or registered practitioner, apothecary, accoucheur, or any other medical or surgical name or title; or (c) advertise or hold himself out, directly or indirectly by any name, word, letter, title or designation, whether expressed in words, or by letters, or partly in one and partly in the other (either alone or in conjunction with any other word or words, or by any other means whatsoever) as being entitled or qualified, able or willing to practise medicine or surgery, in any one or more or all of its branches, or to give or perform any medical or surgical service, attendance, operation or advice.

(2.) Any person who, for himself or as assistant, servant, agent or manager, does or permits any act, matter, or thing contrary to this section, or any part thereof, shall be guilty of an offence.

Penalty: One hundred pounds.

It would be safe to conclude that a pharmacist in the Federal Territory treating patients by diathermy would contravene this clause. In no State in Australia does so drastic a provision exist. It is high time that an effort was made to have the State acts amended in this direction. The Councils of the Branches of the British Medical Association should take the matter up; by doing so they would be doing the public a service.

Current Comment.

COELIAC DISEASE.

SINCE Samuel Gee first described coeliac disease nearly half a century has passed by. The symptomatological description given by that great clinician is like many of the original word pictures of the past generation of medical observers, accurate, concise and graphic. It is true that Gee probably was in error in bringing cases of sprue within the scope of his description, but anyone today reading his account will profit by having his attention drawn to numbers of points in the physical state of the children suffering from this curious ailment which might forgivably have been left unnoticed by a less astute observer. During the period mentioned the disease has had a good deal of attention, and it is only to be expected that in modern studies efforts have been made to shed light upon the aetiology and to elucidate the biochemical problems of digestion and absorption involved.

It is fitting that an English authority should, in the Rachford Memorial Lectures, delivered in the University of Cincinnati, discuss all the accumulated knowledge on this subject since its original description in England. Leonard Parsons, in this interesting communication, after traversing the earlier literature briefly and making a plea for the retention of the present name for the disease as being convenient and non-committal, gives an excellent account of the clinical features.¹ Of these the insidious onset should first be mentioned. The little patient, a child of nine to twenty-four months in age, fails to thrive, may have diarrhoea, dispositional changes are noted, and this state of chronic malnutrition may continue for months or even years without the true nature of the disorder being realized. Coincident rickets may be recognized or some intercurrent malady treated without the weakness, limb wasting, swollen abdomen, infantilism and pale stools being remarked as suggestive of coeliac disease.

Parsons remarks that the characteristic pale fatty stool may resemble oatmeal porridge, as noted by Gee, or may have a curious shiny appearance like

¹ *American Journal of Diseases of Children*, May, 1932.

aluminium paint. The bulk of the stool is remarkable and is a much more striking feature than its looseness. A feature which is common and rather misleading is the occurrence of fermenting, frothy stools, due to carbohydrate fermentation. As is well known, the percentage of fat in the dejecta is inordinately high, sometimes reaching the high figure of 80%. There is little deficiency in fat splitting, however, and a high total fat with fairly normal evidence of fatty acid formation is characteristic. Parsons points out that this purely chemical information must be correlated with the nature of the stool, as the fats are increased in all diarrhoeal states. Another feature of the "coeliac" child is the contrast between the distended abdomen and the flat, wasted buttocks, and an observation of these parts, with due consideration of the evidences of stunting of growth, of deficiency changes, and the strange temperamental personality of the child, should suggest a diagnosis that study of the stool would confirm.

Parsons deals at some length with the vitamin deficiencies observed in coeliac disease. That growth defects and a tendency to contract intercurrent infections may not be solely attributable to vitamin deficiency will be agreed; the defects of general nutrition must also be reckoned with. But the most interesting aspect of this subject is that concerned with rickets. There has been a good deal of divergence of opinion concerning the frequency of rickets in coeliac disease, and Parsons summarizes his findings and views as follows. In infancy there is osteoporosis with some rachitic change; as the coeliac affection becomes more pronounced and growth is arrested, there is a fragile osteoporotic state of the bones without rickets, and as time goes on transverse lines in the metaphysis indicate arrest of growth. When, however, the child attains the age of five to seven years, and more rapid growth occurs, rickety changes are found once more. All these stages would not of necessity be seen in the same patient. Scurvy, tetany and disordered dentition not infrequently occur also, and are other evidences of vitamin insufficiency.

Reference is also made to the morbid anatomy of this disease. Singularly little is known about it. As the author remarks, various types of cellular spoiling found *post mortem* in the few cases studied do not constitute characteristic pathological findings, when we consider how prolonged and debilitating the ailment is. The author mentions Ryle's hypothesis of obstruction of the lacteals, but does not find much to support the idea. Metabolic studies on the living are a more hopeful source of information than autopsy findings, and an interesting account of the present position is given in the article. It is difficult to summarize these, but in general it may be stated that the cause of the disease is probably not the same as that of sprue in the adult, not a chronic infection, not an abnormality of the digestive secretions, nor an endocrine deficiency; and while many of its characteristic symptoms are those of vitamin deficiency, this does

not appear to be the prime cause. The condition seems to be one of faulty absorption. It has recently been suggested that over-alkalinity of the bowel hinders absorption of fat with bile salts, for bile salts do not appear to be lacking to any definite degree. Parsons frankly states that while the disease is a manifestation of a defect in absorption of fat and carbohydrate, the reason for such defect is as yet unknown. Based on these concepts of the malady is the diet he recommends. This is a high protein diet with low fat; carbohydrates are strictly limited and not allowed until definite improvement is noted; vitamins, salts and water must be liberally supplied, and any special vitamin required for particular deficiency symptoms should be given in amounts that will be really adequate.

Further exact knowledge of this disease can be gained only in the laboratory, but cases must be recognized if they are to be studied. The responsibility of recognition rests upon paediatrist and medical officer of the health centre and baby clinic, and even more upon the general practitioner. The diagnosis can be made by purely clinical methods, for it is simply a question of accurate observation, provided it is borne in mind that malnutrition in a baby may be due to coeliac disease.

ARCHIVES OF DISEASE IN CHILDHOOD.

The activities of the British Medical Association extend in many directions. Its members in Australia, in common with those in other parts of the world, are rejoicing at the completion of its one hundred years of life. In a recent leading article in this journal, members of the Association were urged to keep before them certain objectives and to gather into the fold younger graduates who might, in later years, become leaders. Many other aspects of British Medical Association activity were not mentioned.

Members of the Association in Australia receive *The British Medical Journal* every week and we fear that some members take its advent too much as a matter of course, without realizing that the Association tries to set before its members a high standard of scientific thought and experience. Many do not know that the Association produces other journals. The journal known as *Archives of Disease in Childhood* is published by the Association six times a year. Since general practitioners, as well as paediatricians, are largely concerned with disease in children this journal should have a wide appeal. The editors are Dr. Hugh Thursfield and Dr. Reginald Miller. They are assisted by men whose names are almost household words in the world of paediatrics. The subscription to the journal is twenty-five shillings *per annum*. Attention is drawn to this journal in the hope that medical practitioners will become subscribers to it, will extend their knowledge and increase their armamentarium.

Abstracts from Current Medical Literature.

MORBID ANATOMY.

The Classification of Cancer of the Rectum.

C. E. DUKES (*The Journal of Pathology and Bacteriology*, May, 1932) has made a study of cancer of the rectum for the purposes of classification. He has analysed 215 cancers removed by surgical operation. He divides cancers of the rectum into three groups, A, B and C, according to the extent of their spread. "A" cancers are those in which the growth is limited to the wall of the rectum. "B" cancers are those in which extra-rectal spread has occurred, but in which no lymphatic metastasis has taken place. "C" cancers are those in which metastases are present in the regional lymphatic glands. The author believes that "A" cancer is completely eradicated by excision of the rectum, and he states that the excellent results of operation confirm the view that lymphatic metastases are not found until a rectal carcinoma has spread by direct continuity to the extrarectal tissue. A good prognosis is justified in "B" cancer, though slightly less favourable than in "A" cancer. The results of surgical treatment of "C" cancer are very disappointing. The author discusses Broders's classification. He holds that the conclusions reached by grading a tumour according to this method are of value in prognosis. He points out, however, that it is impossible to make a preoperative classification by this means, because the tumour can be accurately graded only by a survey of the histological appearances in all regions.

Tumour Immunity.

THOMAS LUMSDEN has shown that antibodies having a specific cytotoxic effect upon malignant cells can be produced, and that if implanted tumours of rats or mice are caused to regress by injecting antiserum into them, the tumour-bearing animal acquires so high a degree of resistance to the tumour that reimplantations fail to grow. He has also shown that the euglobulin fraction of an anticancer serum contains the antimalignant cell bodies and that the euglobulin fraction is less toxic than the fresh untreated serum. In a further communication (*The Journal of Pathology and Bacteriology*, May, 1932) he has reported results obtained by treating spontaneous cancers in mice with anticancer serum. Forty-seven mice suffering from spontaneous carcinoma were treated by inoculation of the euglobulin fraction of an anticancer (sheep) serum into the tumour area. Some days later the tumour was removed in order to prevent death from too much necrotic material. In forty of the mice an autoplast was implanted. Forty control mice were

similarly treated, except that the euglobulin fraction was made from the serum of a normal animal which had not been immunized against cancer. In all the controls autoplasty was performed. The autoplast failed to grow in 31 of the 40 mice treated with antiserum, whilst in 40 control mice only one autoplast failed. In seven of the mice treated with antiserum no autoplast was implanted, but recurrence did not take place after incomplete excision of the growth. Of the 47 cancerous mice treated with antiserum 34 were cured, while in 13 either the cancer returned or the autoplast underwent progressive growth. The author points out that the euglobulin fractions of anticancer serum are very labile and must be freshly prepared for each treatment. He concludes that his experiments indicate that it is possible to evoke or increase resistance in mice against their own spontaneously arising cancerous tumours. He states that antiserum treatment is not at present applicable to human cancer.

Thrombo-Angiitis Obliterans.

B. T. HORTON AND A. H. E. DORSEY (*Archives of Pathology*, June, 1932) have made an experimental study of *thrombo-angiitis obliterans*. They obtained organisms from the amputated limbs of patients with *thrombo-angiitis obliterans* and in some instances from segments of acutely inflamed superficial veins obtained at biopsy from patients suffering from the same disease. They also obtained organisms from patients suffering from "arteriosclerosis". They state that in this condition the lesion was possibly of a mixed type. By injecting organisms into rabbits at sites adjacent to the femoral vessels and by embedding segments of vessels in positions adjacent to the femoral vessels, lesions essentially the same were produced. These lesions appeared to be identical with those seen in human beings suffering from *thrombo-angiitis obliterans*. They state that as far as they are aware, this is the first occasion on which lesions of this type have been produced in laboratory animals. They conclude that *thrombo-angiitis obliterans* is probably of infective origin and that the streptococcus may be of aetiological significance.

Parathyroid Tumour and Fibrocystic Disease.

G. GORDON TAYLOR AND P. WILES (*The British Journal of Surgery*, April, 1932) report a parathyroid tumour associated with fibrocystic disease. The patient was a normally developed girl, aged twenty years. She sustained a fracture of the left femur and a diagnosis of localized fibrocystic disease was made on X ray examination. Ten months later the limb was amputated. Subsequently X ray examination revealed changes in the structure (rarefaction) of the skeleton. A tumour was removed from the postero-external aspect of the thyroid. Later on, the patient

developed severe tetany. The cut surface of the parathyroid tumour had a yellowish appearance and showed many small rounded and larger slit-like spaces. Many of these were vascular and some apparently cystic. The cells of the growth were arranged in a continuous compact mass, only broken by numerous thin-walled vessels and small cystic spaces; the gland was not lobulated. The histological appearance was compatible with a condition of hyperfunction. Although the bony condition was classified as fibrocystic disease, there was no naked eye evidence of any filling up of the narrow spaces by fibrous tissue; cysts were found only in association with tumour-like masses. The tumour-like masses were not tumour deposits. They represented an exaggeration and persistence of the active spindle cell and osteoclast tissue covering the trabeculae in certain areas. This tissue appeared to result from a hyperactivity of the processes normally involved in the destruction and remodelling of the bones. These areas were patchy. It is suggested that minor injuries played a part in their development.

Poliomyelitis.

A. JORDI (*The Journal of Infectious Diseases*, December, 1931) has investigated interstitial peripheral neuritis in experimental poliomyelitis. He has examined the peripheral nerves of twenty monkeys (*Macacus rhesus*) that had been paralysed for a period varying from twelve hours to forty days. The animals were infected experimentally by intracerebral and intranasal methods. The nerves gave evidence of a definite interstitial inflammation. The perivascular infiltrations, mostly by round cells, were generally small and inconspicuous and were not numerous. Infiltrations were found as early as twelve hours after the onset of the paralysis. In three animals whose nerves were free from infiltrations, and in a few animals in which all the extremities were not affected, paralysis had existed for less than six days. Infiltrations were present in the nerves of extremities that were not paralysed. The sciatic nerves of one normal monkey, which were partly cut respectively twelve and four days before the animal was killed, gave evidence of secondary degeneration, but no signs of interstitial inflammation were present. This is regarded by the author as proving that the interstitial neuritis in experimental poliomyelitis is caused by the specific virus. In the early stages of poliomyelitis necrosis of the ganglion cells, and not the interstitial inflammation, is the first manifestation of the action of the virus.

Papilloma of the Larynx.

H. B. HITZ AND E. OESTERLIN (*The American Journal of Pathology*, May, 1932) report a case of multiple papilloma of the larynx with aerial metastases to the lungs. The patient was a child, aged two years, who was

brought to hospital on account of difficulty in breathing. Under direct laryngoscopy numerous papillomatous masses were removed from the larynx. On examination a diagnosis of benign papilloma was made. Fifteen months later the patient was readmitted on account of the same symptoms. On this occasion radium was used in conjunction with surgical operation. Subsequently further operations were performed and the child eventually died. At *post mortem* examination the whole of the larynx and the upper part of the trachea were found filled with cauliflower-like masses. In the lungs there were many small cavities, varying in size; some were as large as hazel nuts. In many instances connexion with the smaller bronchioli could be traced. In order to exclude metastatic dissemination of the tumour through lymph channels many sections of the peritracheal and peribronchial glands were made without metastases being revealed. On histological examination the primary growth and the deposits in the lung were seen to be non-malignant. The authors think that as a result of the rapid growth of the tumour masses, portions were detached and carried into the bronchi by aspiration. "They passed the larger bronchi but were caught in the bronchioli, obstructing their lumina. In this way they became implantation metastases and began to grow into the alveoli".

Local Tissue Immunity.

G. A. PACHECO (*Archives of Pathology*, June, 1932) discusses local tissue immunity. He gives historical evidence in favour of the existence of local immunity and refers to the interest created by Besredka in the subject. The author finds as a result of his investigations that the continued local intradermal treatment of guinea-pigs with a heat-killed suspension of *Staphylococcus aureus* leads to the proliferation and mobilization of large numbers of macrophages in the area treated. The subsequent inoculation into the area of living virulent staphylococci is followed by an accelerated inflammatory response and healing, with localization of the bacteria in the inoculated area. The localization is due primarily to an antigen-antibody reaction by which bacteria tend to become agglomerated, are presumably "opsonized" and then undergo phagocytosis. The author states that the localization does not seem to be influenced by such mechanical barriers as a deposition of fibrin or thrombosis of lymphatics and blood vessels. As a result of these local tissue changes the harmful effects of the generalization of the bacteria are to a great extent prevented.

MORPHOLOGY.

Intrinsic Structure of the Spinal Cord.

W. F. WINDLE (*Journal of Comparative Neurology*, August, 1931) submits

a further contribution describing the results of his attempts to combine observations on development of mammalian fetus behaviour with subsequent microscopical studies on the nervous system. He finds that in the ten millimetre embryo, in the upper cervical segments, not only primary sensory and primary motor elements, but also commissural and association neuroblasts are stained. Most of the sensory elements show no synapses with commissural and association ones, and no function results. In a 16 millimetre embryo movement first appears in the neck musculature, and particularly in that supplied by the spinal accessory nerve. The communication further describes elements found in 13.5 and 14.0 millimetre, 16.0 to 18.5 millimetre cat embryos. Coincident with the complication of movements, specialization in the mantle layer neuroblasts into more distinct nuclear groups occurs.

Innervation of Pia Mater of Spinal Cord and Medulla.

S. L. CLARK (*Journal of Comparative Neurology*, August, 1931) describes the occurrence of nerve fibres which end on the pia mater and on or near blood vessels and terminations of "sensory" type, besides the vasomotor nerves to the plain muscle of the arterial system. Fibres were found to enter the spinal pia mater from the white matter of the cord, as well as from both dorsal and ventral roots of the spinal nerves. A few nerve fibres occur in the arachnoid.

Innervation of the Thyroid Gland.

J. F. NONIDEX (*American Journal of Anatomy*, July, 1931) states that the thyroid gland of the dog receives nerve fibres derived from the superior cervical ganglion (sympathetic component) and from the superior laryngeal nerve. He further describes the course and relation of these nerves and their anastomoses.

Horseshoe Kidney Associated with the Left Inferior Vena Cava.

E. A. BOYDEN (*Anatomical Record*, December, 1931) describes a fully dissected horseshoe kidney associated with left inferior vena cava—presumably the first report of this combination of anomalies in man. Modification of the venous system is discussed in relation to arrested migration and rotation of the kidneys.

Muscle Tendon Attachment in the Striated Muscle of the Foetal Pig.

RALPH W. CARR (*American Journal of Anatomy*, September 15, 1931) states that the chief connexion between muscle fibre and tendon in the foetal pig is by means of myofibrils which continue into tendon fibrils at the end of the muscle fibre. He finds that this is true of muscles fibres that are attached to their tendons obliquely, as well as of those that meet their tendons in a rectilinear fashion. There is no evidence that the sarcolemma intersects the long axis of the muscle fibre

in the region of its transition to tendon. In the muscle fibres studied there is no evidence of either a continuous or a perforated membrane in this region. In the earlier stages of muscle development both mitoses and amitoses occur in muscle nuclei. Amitosis occurs in the later stages. The author was unable to state whether the sarcolemma is continued on as a tendon sheath or whether muscle fibre is increased by longitudinal fission, although he thought the latter was possible.

The Stem Cell of the Monocyte.

J. F. RINEHART (*Archives of Pathology*, June, 1932) has applied a silver impregnation method of staining to blood films obtained from a patient suffering from monocytic leukaemia. He traces the monocyte to a stem cell corresponding to the haemohistioblast of Ferrata. He states that a graded series of intermediate forms exists between the round or oval, lace-like nucleus characteristic of the haemohistioblast and the folded, skein-like nucleus of the mature monocyte.

Histogenesis of Bone in the Growing Antler.

W. MODEL and C. V. NOBACK (*American Journal of Anatomy*, September 15, 1931) find that the histogenesis of bone in the growing antler is a variation of direct bone formation which provides for support as well as exceedingly rapid growth. The tip of the growing antler is occupied by a cap of mesenchyme, produced for the most part by the adventitia of vessels which connect the vessels of the skin with the vessels of the frontal bone. The mesenchyme cells become transformed into spindle-shaped cells; between the cells there are thin fibrils (osteogenic fibres) which enter into the formation of the bone. The spindle-shaped cells become round and give rise to a supporting tissue with a fibrillar matrix somewhat resembling hyaline cartilage (preosseous tissue). The cells of this preosseous tissue degenerate for the most part, but the fibrils remain intact. Osteoblasts penetrate between the fibrils and lay down osteoid tissue. The formation of bone in the antler is thus regarded as essentially the same process occurring in membrane bone, with the added feature of differentiation of the mesenchyme into a supporting tissue playing the rôle of cartilage.

Neurones of the Sensory Type in the Ventral Roots of Man and of Other Mammals.

W. F. WINDLE (*Archives of Neurology and Psychiatry*, October, 1931) reports the occurrence of nerve cells in the ventral roots of a six months human fetus, in the dog and in the cat, which are of sensory type. The Nissl pattern is typical of sensory cells, they are unipolar, encapsulated, and their axones form glomeruli. They occur singly, in small clusters, or even in little ganglia containing as many as 81 cells.

British Medical Association News.

ANNUAL MEETING.

THE ANNUAL MEETING OF THE SOUTH AUSTRALIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Darling Building, University of Adelaide, on June 29, 1932, DR. A. V. BENSON, the President, in the chair.

Annual Report of Council.

The annual report of the Council was received and adopted. The report is as follows.

Election.

At the annual meeting held last June the following were elected:

President: Dr. A. V. Benson.

Vice-President: Dr. F. St. J. Poole.

Honorary Medical Secretary: Dr. Allan D. Lamphee.

Honorary Treasurer: Dr. W. A. Verco.

Members of Council: Dr. P. Gorrie, Dr. H. Powell, (Dr. J. B. Birch, Dr. R. G. Burnard, Dr. E. Britten Jones, Dr. F. L. Wall remained for another year.)

Federal Committee: Sir Henry Newland and Dr. Bronte Smeaton.

At the first meeting of the Council, held on July 2, 1931, the following subcommittees were appointed:

Scientific: The President, Sir Henry Newland, Dr. E. Britten Jones, Dr. W. A. Verco (Honorary Secretary, Convener).

Contract Practice: The President, Dr. F. St. J. Poole, Dr. F. L. Wall, Dr. H. Powell (Lay Secretary, Convener).

Ethical Committee: The Council.

Revision of Rules: The President, Sir Henry Newland, Dr. Bronte Smeaton (Lay Secretary, Convener).

Parliamentary Bills: The President, Dr. F. St. J. Poole, Dr. C. E. C. Wilson (Lay Secretary, Convener).

Library: The President, Sir Henry Newland, Dr. E. Britten Jones, Dr. P. Gorrie (Honorary Secretary, Convener).

Meetings.

Council.—The Council met on twelve occasions, the attendance being:

Dr. A. V. Benson	10	Dr. F. St. J. Poole ...	10
Dr. J. B. Birch	6	Dr. H. Powell	9
Dr. R. G. Burnard	9	Dr. Bronte Smeaton ..	11
Dr. P. Gorrie	7	Dr. W. A. Verco	11
Dr. E. Britten Jones ..	11	Dr. C. E. C. Wilson ..	9
Dr. A. D. Lamphee ...	9	Dr. F. L. Wall	10
Sir Henry Newland ...	7		

Scientific Subcommittee.—The Scientific Subcommittee met once, the attendance being:

The President.	Sir Henry Newland.
Dr. E. Britten Jones.	Dr. W. A. Verco.
Dr. Allan D. Lamphee.	

Contract Practice Subcommittee.—The Contract Practice Subcommittee met on thirteen occasions, the attendance being:

The President	10	Dr. F. L. Wall	9
Dr. F. St. J. Poole ...	12	Dr. C. F. Drew (coopt)	7
Dr. H. Powell	10		

Library Subcommittee.—The Library Subcommittee met once, the attendance being:

The President.	Dr. Allan D. Lamphee.
Dr. E. Britten Jones.	

Monthly General.—Nine meetings were held during the year, one of these being a clinical evening at the Children's Hospital. The attendances throughout were satisfactory.

The following programme was carried out:

1931—

July: Pictures of Tavistock House, with comments by Sir Henry Newland. "Injuries to Man by Animals, Insects *et cetera*", Professor J. B. Cleland.

August: Paper by Dr. H. W. Wunderly on "The Collapse Therapy of Pulmonary Tuberculosis". Communication by Dr. L. C. E. Lindon.

September: A series of demonstrations showing recent advances in physiology from medical and surgical aspects, by Professor C. S. Hicks.

October: Paper by Dr. L. O. Betts on "Disabilities of the Knee Joint".

November: Paper by Dr. Helen Mayo on "Some Problems in Infant Feeding".

1932—

February: Paper by Dr. Brian Moore on "Eye Changes in General Medicine".

March: Clinical evening at Children's Hospital.

April: Paper by Dr. Guy Lendon on "Syphilis of the Heart and Great Vessels".

May: Listerian Oration, by Dr. S. A. Smith, Sydney, on "Nephritis: A General Survey".

Federal Committee.

Sir Henry Newland and Dr. Bronte Smeaton represented the Branch at the meeting held in Melbourne on February 16, 1932.

The Late Dr. R. H. Todd.

The British Medical Association has suffered incalculable loss in the death of Dr. R. H. Todd, which is mourned by the medical profession throughout the Commonwealth and by many in the Old Country. He was one of those who took steps to form the Federal Committee of the British Medical Association in Australia, with the object of coordinating the work of the six Australian Branches, and was responsible for the drafting of the Constitution of the Federal Committee, and also the drafting of the Constitution of the Australasian Medical Publishing Company, Limited. A sterling attribute was his intense loyalty to the British Medical Association, and it is no more than the truth to say that the commanding position of the Association today is very largely due to Dr. Todd's organizing ability and to the example he set in New South Wales. A memorial service was held at the British Medical Association House, New South Wales, on Sunday, February 21, 1932, for the purpose of dedicating the Robert H. Todd Assembly Hall, at which the South Australian Branch was represented by Sir Henry Newland.

Membership.

The membership of the Branch is 383. The number of new members elected was eight, the balance representing the difference between transfers "in and out", after deducting deaths *et cetera*. It is with deep regret that we record the deaths of Dr. T. James, Dr. F. Steele Scott, Dr. Malcolm Scott and Dr. S. M. Verco.

Listerian Oration.

Sir Charles Martin, who had been asked to deliver the Listerian Oration last year, was unable to deliver the oration on the last Thursday in May, the usual date, owing to his absence in Queensland at that time. The Council decided to alter the date to June 24, 1931. Sir Charles chose for his subject "The Early Bacteriological Work of Lister and the Origin of the Aseptic System".

The oration this year was delivered by Dr. S. A. Smith, of Sydney, his subject being "Nephritis: A General Survey".

On both these occasions a representative gathering of members attended. The Council desires officially to thank Sir Charles Martin and Dr. Smith.

Representation on Boards.

Dental Board.—Dr. P. S. Messent was appointed to represent the Association on the Dental Board.

Medical Board.—Dr. H. H. E. Russell was nominated by the Council as a member of the Medical Board of South Australia for a further term.

Lodge Matters.

After protracted negotiations with lodge representatives, arrangements have been finalized, the existing unit rate of 3s. 6d. operating for twelve months from December 1 last in the metropolitan area. Close attention has been given to this matter by the Council during the year, and the negotiations have been carried on under difficulties, largely the result of the present financial conditions. Very determined attempts have been made to reduce lodge surgeons' fees, although the greatest satisfaction has been expressed by the lodge representatives from time to time at the excellent services given to the lodges by lodge surgeons. The united attitude taken by the lodge surgeons has assisted the Council very materially in maintaining the present rate, and their hearty cooperation will be needed in future, in order to secure reasonable remuneration for lodge work.

Adelaide Permanent Post-Graduate Committee.

Arrangements were made by the Committee for two lectures by Mr. C. H. Fagge, F.R.C.S., Vice-President of the Royal College of Surgeons of England, on February 8 and 9 last, the attendance at which was satisfactory. The annual refresher course was held from May 23 to 28 last, including two lectures by Dr. A. M. Wilson, of Melbourne. The interest in the course is being well maintained, a good number of members taking advantage of the lectures.

Library.

During the year the Council decided to reduce the library subscription to five shillings per year from January 1, 1932. Arrangements have not yet been completed with the University for forwarding books to those country members who desire to avail themselves of the library, but it is expected that matters will be finalized at a conference to be held at an early date, when country members will be advised fully.

Work of Sections.

The Eye, Ear, Nose and Throat Section.—The Eye, Ear, Nose and Throat Section has held eight meetings during the year, the attendance being satisfactory.

Section of Clinical Medicine.—The Section of Clinical Medicine has increased its membership from 52 to 62 during the year. Six meetings have been held, which have been well attended.

Section of Anæsthetics.—The Section of Anæsthetics consists of seventeen members, and three meetings have been held.

Section of History of Medicine.—The Section of History of Medicine was formed on August 3, 1931, and two meetings have been held during the year.

Section of Radiology.—At a meeting of the Council, held April 7, 1931, permission was given to form a Section of Radiology.

Centenary of the British Medical Association.

The annual meetings of the Parent Association this year are of special interest, as it is the occasion of their centenary. The meetings will take place from July 21 to 29, 1932, inclusive, and efforts have been made to secure a representative delegation from overseas. The South Australian Branch will be represented at the meetings by Sir Henry Newland as representative, and Dr. J. Stanley Verco and Dr. S. L. Dawkins as delegates. The suggestion has been made that the centenary should be used as an incentive to non-members of the Association to apply for membership, and it is hoped that members will assist in this direction.

The Branch has been honoured by the election of Sir Henry Newland as Vice-President of the Section of Surgery, and Dr. Gilbert Brown as Vice-President of the Section of Anæsthetics.

Australasian Medical Congress (British Medical Association), Fourth Session.

Owing to the economic conditions and the likelihood of the attendance from the eastern States being very small, the Western Australian Branch, who had invited the Congress to meet at Perth in October next, suggested the desirability of postponing it. The matter was before the last meeting of the Federal Committee, when it was decided to postpone the Congress, which will probably be held in 1934.

Broadcast Lectures.

During the year the Council made arrangements with 5CL for a series of lectures on health matters, and the talks are being delivered at fortnightly intervals, the subjects having been chosen by the Council, and have been well received.

Anatomical and Pathological Museum at the University.

The Council has had under consideration the suggestion that the Association should establish some connexion with the Anatomical and Pathological Museum at the Adelaide University. A subcommittee was appointed to go into the matter, which will be referred to a general meeting of the Branch.

Patients at Adelaide Hospital.

The admission of patients to the Adelaide Hospital who are able to afford private attendance has been under the notice of the Council. It is felt by many members that persons who should be in private hospitals are admitted to the Adelaide Hospital, and that they were in some cases paying as much as they would be charged in the private hospitals. A subcommittee was appointed to go into the matter, as a result of which a recommendation has been made to the Government that the highest fee charged at the Adelaide Hospital should be £2 10s. per week. It is felt that in this way the hospital would be relieved of many patients, thus affording greater opportunities to those who are unable to pay anything to enter for treatment, besides which it would also assist the private hospitals, many of which were suffering financially as a result of the loss of private patients to the public hospitals.

"The Medical Journal of Australia."

It is pleasing to record that the Australasian Medical Publishing Company, Limited, has had a very successful year, and is gradually extending its operations. This should be reflected in the increased usefulness of the journal.

Polkomyelitis.

The Joint Committee of the Branch and Red Cross Society, formed last year, continues to work successfully. Although, fortunately, there were only a few cases to treat last summer, the Committee now has a supply of serum, and has also supplied some to Western Australia. The activities of the Committee have been extended to the problem of crippled children. During the year a depot was established at Mount Gambier.

Visitors.

Mr. C. H. Fagge, F.R.C.S., Senior Vice-President of the Royal College of Surgeons of England, and Surgeon to Guy's Hospital, London, visited Adelaide during February and delivered two lectures under the auspices of the Post-Graduate Committee. He was entertained at luncheon by the President and Council of the Association.

Tuberculosis.

The Council has had under consideration a scheme for the better control of tuberculosis in this State, and the matter is still being considered.

Gift to the Branch.

During the year the President donated three shares in the British Medical Hall Company, Limited, to the Branch. The Council appreciates the gift of Dr. Benson and thanks him for his generosity.

General Remarks.

Increasing interest is being shown in the work of the Branch, which has been reflected in the many questions brought before the Council for consideration during the year. These activities cannot be embodied in the annual report, but the interests of the medical profession have been closely watched. Interviews with the Government have taken place from time to time in order that greater coordination may be established in matters affecting the general health of the community, and it is believed that a good deal has been accomplished in this direction. It is hoped that still greater interest in the activities of the

Branch will be shown, thus making the Association a more powerful factor in the promotion of medical and allied science and maintaining the honour and interests of the medical profession.

(Signed) A. V. BENSON,

President.

Financial Statements.

The financial statements, as submitted by the Honorary Treasurer, Dr. W. A. Verco, were received and adopted. The statements are published herewith.

Income and Expenditure for year ended December 31, 1931.

	£	s.	d.	£	s.	d.		£	s.	d.	£	s.	d.
To Amount due British Medical Association, London, on Paid Subscriptions	399	5	9				By Medical Certificates				0	2	5
" Amount Due British Medical Association, London, on Unpaid Subscriptions ..	76	10	0				" City Subscriptions	889	16	0			
				475	15	9	" Country Subscriptions	452	12	6			
" THE MEDICAL JOURNAL OF AUSTRALIA				446	1	3	" Accrued Subscriptions	252	0	0	1,594	8	6
" Lister Medal				0	10	0	" Interest				21	14	5
" Telephone	24	2	9										
" Exchange	0	17	1										
" Rent	52	0	0										
" Postages and Telegrams ..	34	3	8										
" General Expenses	46	12	2										
" Stationery and Printing ..	42	11	3										
				200	6	11							
" Salary				350	0	0							
" Library Account				112	5	0							
" Depreciation				13	8	6							
" Balance				17	17	11							
				£1,616	5	4					£1,616	5	4

Library Fund Account, December 31, 1931.

	£	s.	d.		£	s.	d.
To Adelaide University	100	0	0	By Balance brought down, December 31, 1930	518	12	1
" General Fund Account	5	0	0	" Interest from Savings Bank	5	5	9
" Depreciation	13	10	3	" Country Subscription	0	5	0
" Balance	517	17	7	" Transfer from Income and Expenditure Account, 223 Full at 10s. and 3 Half Subscriptions at 5s.	112	5	0
	£636	7	10		£636	7	10

General Fund Account.

	£	s.	d.		£	s.	d.
To Telephone Account for 1930	8	5	10	By Balance brought down, December 31, 1930	2,736	7	0
" Balance	2,812	2	1	" Outstanding Cheque written off; Sundries	1	3	0
	£2,820	7	11	" Library Account	5	0	0
				" Shares in British Medical Hall Company, Limited, presented by members	60	0	0
				" Amount Transferred from Income and Expenditure Account	17	17	11
					£2,820	7	11

Balance Sheet as at December 31, 1931.

LIABILITIES.				ASSETS.			
	£	s.	d.		£	s.	d.
To Subscriptions paid in advance			13 3 0	By Plant and Fittings	134	3	10
" Amount due British Medical Association, London, on Paid Subscriptions .. .	910	9	9	Less Depreciation	13	8	6
" Amount due British Medical Association, London, on Unpaid Subscriptions .. .	76	10	0				120 15 4
			986 19 9	" Investments—			
" THE MEDICAL JOURNAL OF AUSTRALIA .. .			117 10 0	Commonwealth Loan .. .	403	12	0
" Library Fund .. .			517 17 7	British Medical Hall Company, Limited .. .	1,920	0	0
" Sundry Creditors .. .			50 1 6				2,323 12 0
" Amount due British Medical Association, London, Account Interest .. .			20 9 7	" Library Fund—			
" General Fund .. .			2,812 2 1	Delineascope .. .	55	2	10
				Projector and Kodascope ..	79	10	0
							134 12 10
				Less Depreciation .. .	13	10	3
							121 2 7
				" Lister Medals and Dies .. .			20 3 4
				" Savings Bank (Library Fund)			124 0 0
				" British Medical Hall Company, Limited, Loan .. .			450 0 0
				" Subscriptions owing .. .			289 14 0
				" Stocks—			
				Hospital Forms .. .	0	16	1
				Medical Certificate Books ..	4	8	2
							5 4 3
				" Sundry Debtors .. .			1 5 0
				" Savings Bank of South Australia .. .	980	9	7
				" National Bank of Australasia, Limited .. .	62	3	5
				" Cash in hand .. .	19	14	0
							1,062 7 0
							£4,518 3 6

W. A. VERCO, Honorary Treasurer.

WALTER C. DOBBIE, Lay Secretary.

Audited and found correct according to the books and vouchers produced.

Adelaide, May 4, 1932.

MUECKE, WILTSHIRE & Co.,
Chartered Accountants (Australia),
Auditors.

Induction of President.

Dr. A. V. Benson introduced the President, Dr. F. St. J. Poole, to the meeting and conferred on him the President's badge. In vacating the office, Dr. Benson expressed his gratitude to members of the Council and of the Branch for their loyalty and cooperation during the previous twelve months. He felt sure that the best traditions of the office would be upheld by Dr. Poole.

Dr. F. St. J. Poole thanked the members for having elected him to the presidential chair. He asked for the cooperation of members and expressed his willingness to do all that lay in his power to live up to the standards of the past.

Election of Office-Bearers.

Officers for the ensuing twelve months were declared elected as follows:

Vice-President: Dr. E. Britten Jones.

Honorary Medical Secretary: Dr. Alan H. Lendon.

Honorary Treasurer: Dr. W. A. Verco.

Members of Council: Dr. H. Halloran, Dr. L. C. E.

Lindon, Dr. A. D. Lamphee, Dr. A. F. Stokes.

Delegates to the Federal Committee: Sir Henry Newland, Dr. Bronte Smeaton.

Votes of Thanks.

Votes of thanks were accorded to Dr. A. D. Lamphee, the retiring Honorary Medical Secretary, and to the members of the Council.

President's Address.

Dr. Benson read his President's Address (see page 221). A vote of thanks was accorded to Dr. Benson on the motion of Dr. E. Britten Jones, seconded by Dr. C. E. C. Wilson.

Medical Practice.

HOSPITAL PRACTICE IN NEW SOUTH WALES.

THE Medical Secretary of the New South Wales Branch of the British Medical Association has forwarded the following article dealing with *The Public Hospitals Act, 1929*, of New South Wales. The article has been written by Dr. R. B. Wade. Many medical practitioners do not understand how they are affected by the Act; they are therefore advised to keep Dr. Wade's statement for future reference.

Section 35. (1) The Commission may, and at the request of any hospital shall, hold an inquiry as to whether it is desirable that any portion of a hospital should be set apart for the admission and treatment of persons able to pay for and who may contract with the hospital for private or intermediate accommodation.

(2) The Commission may after inquiry authorize the setting apart of any such portion.

Section 36. (1) No medical practitioner shall, except in the circumstances and under the conditions prescribed, charge a patient, who is under treatment by him in a hospital, with any fees in respect of the treatment.

(2) Save in circumstances prescribed by the regulations, no contract between a patient and a medical practitioner for payment for such treatment shall be enforceable.

Regulation 28. The Board of the hospital concerned shall be the final authority, on a recommendation by

a medical practitioner on Form 4 for a "private" patient and on Form 5 for an "intermediate" patient, to determine any question relating to the admission of such patients.

Regulation 29. The contract to be completed by private and intermediate patients on admission to a hospital or by some responsible person acting on their behalf, shall be in or to the effect of Forms 4 and 5 respectively.

Regulation 30. The witness to the patient's signature on Form 4 and Form 5 shall be a responsible officer of the hospital, who shall, at the time of admission, inform a private patient of the charge for accommodation and also of the scale of charges for extras, none of which shall include any medical fees, which shall be a matter of arrangement between the patient and his medical attendant.

In the case of an intermediate patient, the witness shall inform him of the charge for accommodation and that the fees chargeable by medical practitioners for attending intermediate patients in hospital shall be in each case a matter of agreement between doctor and patient. Such fee shall in no case exceed 50% of the fees usually charged to full private patients in the particular district.

Regulation 31. In the case of a patient who contracts with a hospital for private or intermediate accommodation and where the medical practitioner recommending his admission agrees that the hospital charges shall have priority to his professional charges for the treatment of the patient in the hospital and that he will give the hospital twenty-one days' notice in writing before he takes proceedings to recover such fees, a contract between the patient and the medical practitioner for payment for such treatment shall be enforceable.

Regulation 32. The maximum fee to be charged by any medical practitioner for services rendered by him to any intermediate patient shall be according to a scale of fees approved by the Commission on the recommendation of some association or body of medical practitioners which represents the majority of medical practitioners practising in New South Wales.

Regulation 33. All duly qualified medical practitioners in districts served by a public hospital shall be entitled to render services to private and intermediate patients in such public hospital, except any such practitioner as may for special reasons be deemed unsuitable by the board and the Commission.

Regulation 35. Notwithstanding that a patient has been admitted to one portion of a hospital the board may transfer him to any other portion if the board has satisfied itself that the financial circumstances of the patient are such as to render such transfer appropriate and if such transfer will not in the opinion of the medical officer in charge of the case adversely affect the patient.

Regulation 36. If after a patient's admission to a portion of a hospital other than an intermediate or private portion, it is established that by reason of his means he should have been classified as a private or intermediate patient, the board of the hospital may require the patient to enter into a contract to pay the charges prescribed by the by-laws for the classification in which he should have been admitted or to leave the hospital. Also the medical attendant may recover from such patient the charges for medical attendance appropriate to the portion of the hospital to which the patient should have been admitted.

FORM 4.

Public Hospitals Act, 1929.

Section 35.

Recommendation for admission of a patient to the Private portion of a hospital.

(To be completed and signed by the recommending medical practitioner.)

The Secretary,
... Hospital,

I recommend the admission of ... of ... aged ... years, to a ... bed in the above hospital and desire that the patient be put under my care (or the care of ...).

And I agree that the hospital charges shall have priority to any professional charges due to me for the treatment of the patient, and that I will, before taking any proceedings for the recovery of my charges, give twenty-one days' notice of my intention to the hospital.

(Signed)

Medical Practitioner.

(Place)

(Date)

(¹ State whether medical, surgical, infectious, etc., bed is desired.)

Patient's contract, to be completed on admission by the patient or some responsible person acting on his behalf.

I, the abovenamed ... (or ... of ... on the patient's behalf), hereby undertake to pay to the Board of Directors of ... Hospital on demand the charges fixed for accommodation in the Private portion of the hospital.

(Signed)

(Witness)

(Note.—The witness shall be a responsible officer of the hospital, who will at the time of admission inform the patient of the charge for accommodation and also the scale of charges for extras, none of which shall include any medical fees, these being a matter of arrangement between the patient and the medical attendant.)

FORM 5.

Public Hospitals Act, 1929.

Section 35.

Recommendation for admission of a patient to the Intermediate portion of a hospital.

(To be completed and signed by the recommending medical practitioner.)

The Secretary,

... Hospital,

I recommend the admission of ... of ... aged ... years, to a ... bed in the above hospital and desire that the patient be put under my care (or the care of ...).

And I agree that the hospital charges shall have priority to any professional charges due to me for the treatment of the patients, and that I will, before taking any proceedings for the recovery of my charges, give twenty-one days' notice of my intention to the hospital.

(Signed)

Medical Practitioner.

(Place)

(Date)

(¹ State whether medical, surgical, infectious, etc., bed is desired.)

Patient's contract, to be completed on admission by the patient or some responsible person acting on his behalf.

I, the abovenamed ... (or ... of ... on the patient's behalf) hereby undertake to pay to the Board of Directors of ... Hospital on demand the charges fixed for accommodation in the Intermediate portion of the hospital.

(Signed)

(Witness)

(Note.—The witness shall be a responsible officer of the hospital, who shall at the time of admission inform

the patient of the charge for accommodation and approved extra charges and advise him that the medical fees may only be charged in accordance with the provisions of Regulation 30 of the Act.)

Interpretation of These Sections and Regulations.

Unless a public hospital is registered in accordance with Section 35, no medical practitioner is entitled to claim from a patient any fees for services performed in the hospital.

If a public hospital is registered under Section 35, a medical practitioner shall be entitled to claim fees for services rendered in hospitals only under such circumstances as are detailed in Regulations 28 to 36.

If the public hospital is registered under Section 35, it may set aside beds for private or intermediate accommodation in the following ways:

(1) May set aside a portion of the buildings as private or intermediate beds to form an intermediate or private block or section.

(2) May set aside a ward or portion of a ward or one or more beds in a ward and designate them private or intermediate beds.

(3) May nominate any bed in the public ward as a private or intermediate bed, if it should be found that by reason of his means the patient should have been classified as a private or intermediate patient, and may make such charges from the date of the patient's admission, although some period of time may have elapsed before declaring the patient a private or intermediate patient.

Relation of Medical Practitioners to Patients in Private or Intermediate Beds of a Public Hospital.

Regulation 33 provides that all private or intermediate beds in a public hospital shall be open to all medical practitioners in the district; in other words, that these shall constitute an "open" hospital.

This is in effect in most hospitals in the country districts, and the private or intermediate patients are then treated in the beds of the wards of the public hospital or in special rooms or wards set apart for such patients, and all medical practitioners in the district are entitled to attend there such patients as have been admitted under them in the specified way, namely, under Form 4 or 5, except any such practitioner as may for special reasons be deemed unsuitable by the board and the Commission.

In many of the hospitals in the metropolitan area which have been registered under Section 35, it is considered by the Hospitals Commission that, until these hospitals are able to build a separate section for the accommodation of private and intermediate patients, it is impossible to give effect to this regulation, owing to the dislocation of hospital routine that would ensue, and the Hospitals Commission has decided that for the time being this part of the hospital must be used only by the medical staff of the hospital; in other words, for the time being, such must be a "closed" hospital.

Forms of Admission.—If a medical practitioner wishes to send a patient into the private or intermediate part of a public hospital, he must fill in and sign Form 4 or 5 respectively; these must be completed by the hospital executive in the form presented by Regulations 29 and 30.

The clause in Forms 4 and 5, "and I agree that the hospital charges shall have priority to any professional charges due to me for the treatment of the patient, and that I will, before taking any proceedings for the recovery of my charges, give twenty-one days' notice of my intention to the hospital", and Regulation 31 give the medical practitioner the right to recover legally his fees, if unpaid.

This clause would appear to give the hospital the right to collect as well as recover, subject to the twenty-one days' notice by the medical practitioner of intention to take proceedings, all fees payable before the medical practitioner may do so. The Hospitals Commission, however, interprets this to mean that the medical practitioner is at liberty to make his own arrangements as to fees and to collect them when he likes, except, when both hospital and medical practitioner's fees are unpaid, the hospital has priority of claim to take proceedings; in

other words, medical practitioners cannot take proceedings to recover their fees unless they have given the hospital twenty-one days' notice of their intention to do so.

Regulation 32 (*Government Gazette*, No. 107, of August 8, 1930) has not been carried out, in that no recommendation has been made by the suggested association or body and is now overridden by Regulation 30 (*Government Gazette*, No. 29, of March 6, 1931), which lays down that the fees for intermediate patients should not be more than 50% of the fees ruling in the district.

In the case of large metropolitan hospitals serving patients from all areas of the State, the interpretation is of not more than 50% of the fees usually charged by the medical practitioner attending the hospital.

Subject to the exception of not more than 50% of the ruling rates in the case of intermediate patients, the medical fees shall be a matter of arrangement between the patient and the medical attendant, as too, is the payment of medical fees, except those in which proceedings have to be undertaken.

How These Regulations Take Effect in Certain Cases.—

(1) In the case of a patient who is occupying a bed in a public hospital and whose means are found to be such that the hospital classifies him as a private or intermediate patient. This may happen in cases of (a) imposition, (b) accident or emergency.

In Section 36 the hospital executive may call on him to pay the assessed charges or to leave the hospital, and the hospital executive may take legal proceedings in court against such patient for charges under his assessed rating from the date of admission to the date of discharge, and the medical practitioner may do the same subject to the clause giving the hospital priority of claim unless twenty-one days' notice has been given by the medical practitioner.

Cases Under the Workers' Compensation Act.—The *Workers' Compensation Act* lays down that the employer is liable to pay the cost of medical treatment of the injured worker and that the maximum fee for which he shall be liable for such treatment is £25.

In a public hospital the right of a medical man to charge is derived from the *Public Hospitals Act* of New South Wales, 1929, and unless the provisions of the Act are complied with, the medical attendant has no right to charge.

Therefore, to establish a right to charge an injured worker under the *Workers' Compensation Act* in a public hospital, (a) the hospital must be registered under Section 35, (b) Form 4 or 5 must be signed (Form 5 will be the usual one), (c) Regulations 29 and 30 must be carried out. Recently an insurance office has refused to pay these charges on the grounds that (b) and (c) had not been effected in full.

Correspondence.

INTRAVENOUS PYELOGRAPHY.

SIR: In my brief *résumé* on intravenous pyelography published in *THE MEDICAL JOURNAL OF AUSTRALIA* on July 2 last, I mentioned some of the so-called contraindications which have been postulated from time to time by various workers. Few contraindications as there were, nevertheless, they appeared to be real ones when the original "Uroselectan" of von Lichtenberg was being extensively used in intravenous pyelography.

With the advent of "Uroselectan B" one saw these so-called contraindications gradually dwindle until they were practically confined to advanced heart disease, conditions of extreme debility, acute renal infections and pregnancy.

I was extremely interested last night at the British Medical Association meeting to hear both Dr. Oxenham and Dr. Silvertown express the opinion that there were no contraindications to intravenous pyelography with the use of "Uroselectan B". Interesting slides were shown amongst others, demonstrating intravenous investigations which were carried out during various stages of pregnancy

and also in acute renal conditions, without any deleterious effect. This is still another instance demonstrating the safety of the method.

Might I express a small measure of disappointment that the meeting appeared to be confined almost entirely to radiologists and urologists, for, although these papers will be read with interest when published, there were many practical points, both in its sphere of usefulness and in interpretation, that cannot be reproduced by publication.

Yours, etc.,

D. G. MAITLAND.

137, Macquarie Street,
Sydney,
July 29, 1932.

Obituary.

HENRY CROKER GARDE.

WE regret to announce the death of Dr. Henry Croker Garde, which occurred at Maryborough, Queensland, on August 9, 1932.

NOTICE.

THE annual meeting of the Fellows of the Royal Australasian College of Surgeons resident in New South Wales will be held on September 2, 1932. Dr. G. A. C. Douglas, of Brisbane, will deliver an address at the Robert H. Todd Assembly Hall, 135, Macquarie Street, Sydney, at 8.15 p.m. on "Compound Fractures: Results of Primary Suture". Members of the British Medical Association are invited to attend.

Diary for the Month.

AUG. 23.—New South Wales Branch, B.M.A.: Medical Politics Committee.
AUG. 25.—South Australian Branch, B.M.A.: Branch.
AUG. 25.—New South Wales Branch, B.M.A.: Branch.
AUG. 26.—Queensland Branch, B.M.A.: Council.

Medical Appointments.

Dr. W. E. Audley has been appointed Medical Officer, Department of Mental Hospitals, New South Wales.

Dr. O. M. Moulden (B.M.A.) has been appointed Temporary Honorary Clinical Assistant to the Surgical Section of the Adelaide Hospital, South Australia.

Dr. A. D. Reid (B.M.A.) has been appointed as Officer of Health at Crafers, South Australia.

Dr. P. Gorrie (B.M.A.) has been appointed as Medical Officer to the destitute persons of the district at Crafers, South Australia.

Dr. C. Sangster (B.M.A.) has been appointed as Officer of Health at Clare, South Australia.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xviii.

FREMANTLE HOSPITAL, FREMANTLE, WESTERN AUSTRALIA:
Junior Medical Officer.

LAUNCESTON PUBLIC HOSPITAL, TASMANIA: Resident Medical Officer (male).

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Mount Isa Mines. Toowoomba Associated Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

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